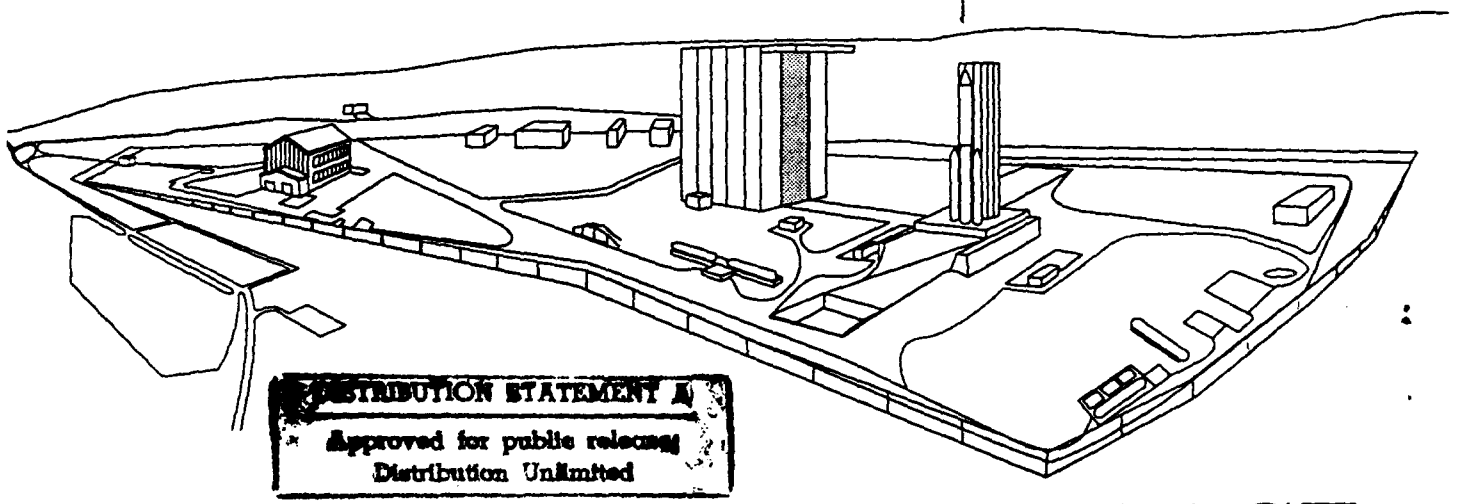
AD-A268 552



DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

ENVIRONMENTAL IMPACT ANALYSIS PROCESS

VOLUME II: APPENDICES

PRELIMINARY
DRAFT ENVIRONMENTAL IMPACT STATEMENT
CONSTRUCTION AND OPERATION OF
SPACE LAUNCH COMPLEX 7

VANDENBERG AIR FORCE BASE, CALIF.

15 MARCH 1989

DEPARTMENT OF THE AIR FORCE

93-19858

93 8 24 187

Air Force
Environmental Planning Division
(HQ USAF/CEVP)

Room 5B269
1260 Air Force Pentagon
Washington, DC 20330-1260

16 JUL 93

MEMORANDUM FOR DTIC (Acquisition)
(ATTN: Patt Mauby)

SUBJ: Distribution of USAF Planning Documents Forwarded on 1 July 93

All the documents forwarded to your organization on the subject date should be considered Approved for Public Release, Distribution is unlimited (Distribution statement A).

Mr. Jack Bush, GM-14
Special Projects and Plans
703-697-2928
DSN 227-2928

VOLUME II: APPENDICES

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APPENDIX D: TECHNICAL MEMORANDUM - ACIDIC DEPOSITION TITAN IV/CENTAUR LAUNCH FROM CYPRESS RIDGE

A.1 FEDERAL REGISTER NOTICE OF INTENT

DTIC QUALITY INSPECTED 3

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DTIC TAB	☐
Unannounced	☐
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Dower House Road
Washington, DC
Janitorial Service
The Rexnord Building
4277 Poche Court West
New Orleans, Louisiana

C.W. Fletcher,

Executive Director.

[FR Doc. 88-7748 Filed 4-7-88; 8:45 am]

BILLING CODE 6820-33-M

DEPARTMENT OF DEFENSE

Department of the Air Force

Intent (NOI) To Prepare an Environmental Impact Statement for the Proposed Construction and Operation of Space Launch Complex 7 at Vandenberg Air Force Base (AFB), California

The Department of the Air Force is proposing to construct and operate Space Launch Complex 7 (SLC-7) at Vandenberg AFB to launch Department of Defense satellites beginning in 1994 into polar orbit aboard Titan Centaur expendable space launch vehicles. The proposed location of SLC-7 is near Cypress Ridge on South Vandenberg, approximately one mile south of SLC-6, the Vandenberg AFB launch site for the Space Shuttle. The proposed action includes the construction of the launch complex and support facilities, the extension of roads and utilities on Vandenberg AFB, and the launching of the Titan Centaur. In addition, existing launch support facilities constructed for other space launch systems at Vandenberg AFB (i.e., Space Shuttle) are proposed to be used and/or modified as required to support the new launch complex. The satellites proposed to launch aboard the Titan Centaur from SLC-7 require polar orbits. Vandenberg AFB is the only existing U.S. government launch site that can launch satellites into polar orbits without over flying populated land masses. Therefore, Vandenberg AFB is the only feasible location for the proposed SLC-7. Alternative sites on Vandenberg AFB are being evaluated for SLC-7 including a coastal terrace near Point Arguello, and an upland terrace approximately one miles south of the proposed Cypress Ridge site.

The Department of the Air Force will hold two public scoping meetings to solicit inputs on significant environmental issues associated with the construction and operation of SLC-7 at Vandenberg AFB. These scoping meetings are scheduled for May 3, 1988 at the Lompoc Civic Auditorium, 217 South "L" Street, Lompoc, CA from 7:00—10:00 pm; and May 5, 1988 at the Goleta Valley Community Center, 5679 Hollister Avenue, Goleta, CA from 7:00—10:00 pm. In addition to these two scoping meetings, written inputs to the scoping process are solicited. Comments in response to this NOI or as part of the scoping process are requested in writing within 30 calendar days from publication of this notice in the Federal Register.

Questions concerning the proposed action or the NEPA process for the action, comments on this NOI, or written inputs to the scoping process should be mailed to Mr. Robert Mason, Department of the Air Force, Headquarters Space Division/DEV, P.O. Box 92960, Los Angeles, CA 90009-2960. Telephone inquiries should be directed to Mr. Mason at (213) 643-1409.

Patsy J. Conner,

Air Force Federal Register Liaison Officer.

[FR Doc. 88-7710 Filed 4-7-88; 8:45 am]

BILLING CODE 3910-01-M

DEPARTMENT OF EDUCATION

Proposed Information Collection Requests

AGENCY: Department of Education.

ACTION: Notice of proposed information collection requests.

SUMMARY: The Director, Information Technology Services, invites comments on the proposed information collection requests as required by the Paperwork Reduction Act of 1980.

DATE: Interested persons are invited to submit comments on or before May 9, 1988.

ADDRESSES: Written comments should be addressed to the Office of Information and Regulatory Affairs, Attention: Jim Houser, Desk Officer, Department of Education, Office of Management and Budget, 726 Jackson Place, NW., Room 3208, New Executive Office Building, Washington, DC 20503. Requests for copies of the proposed information collection requests should be addressed to Margaret B. Webster, Department of Education, 400 Maryland Avenue, SW., Room 5624, Regional Office Building 3, Washington, DC 20202.

FOR FURTHER INFORMATION CONTACT: Margaret B. Webster, (202) 732-3915.

SUPPLEMENTARY INFORMATION: Section 3517 of the Paperwork Reduction Act of 1980 (44 U.S.C. Chapter 35) requires that the Office of Management and Budget (OMB) provide interested Federal agencies and the public an early opportunity to comment on information collection requests. OMB may amend or waive the requirement for public consultation to the extent that public participation in the approval process would defeat the purpose of the information collection, violate State or Federal law, or substantially interfere with any agency's ability to perform its statutory obligations.

The Director, Information Technology Services, publishes this notice containing proposed information collection requests prior to submission of these requests to OMB. Each proposed information collection, grouped by office, contains the following: (1) Type of review requested, e.g., new, revision, extension, existing or reinstatement; (2) Title; (3) Frequency of collection; (4) The affected public; (5) Reporting burden; and/or (6) Recordkeeping burden; and (7) Abstract. OMB invites public comment at the address specified above. Copies of the requests are available from Margaret Webster at the address specified above.

Dated: April 4, 1988.

Carlos U. Rice,

Director for Information Technology Services.

Office of Planning, Budget, and Evaluation

Type of Review: New
Title: Administrative Cost Study of the College Cost Containment Project
Frequency: One time only
Affected Public: Businesses or other for-profit, non-profit institutions
Reporting Burden:
Responses: 600
Burden Hours: 900
Recordkeeping:
Recordkeepers: 0
Burden Hours: 0

Abstract: This study will collect information from postsecondary institutions that have participated in the College Cost Containment Project. The Department will use the data to analyze and test cost reduction methods.

Office of Special Education and Rehabilitation Services

Type of Review: New
Title: Evaluation of State Vocational Agency Costs
Frequency: One time only
Affected Public: State or local governments
Reporting Burden:
Responses: 40
Burden Hours: 920
Recordkeeping:
Recordkeepers: 0
Burden Hours: 0

Abstract: This study will collect information on Vocational

A.2 UNITED STATES AIR FORCE NEWS RELEASE

A-4

News Release

United States Air Force

HEADQUARTERS SPACE DIVISION (AFSC) OFFICE OF PUBLIC AFFAIRS LOS ANGELES AFS
PO BOX 92960, WORLDWAY POSTAL CENTER, LOS ANGELES, CA 90009 (213) 643-0254 AV 833-0254

April 13, 1988

AIR FORCE ANNOUNCES PUBLIC
MEETINGS ON VANDENBERG AFB
SPACE LAUNCH PROJECT

LOS ANGELES AIR FORCE BASE, Calif -- Officials at Headquarters Air Force Space Division announced here today that public meetings will be held to solicit from the public the scope of issues to be addressed and analyzed in the environmental impact statement for a new space launch project at Vandenberg Air Force Base.

These meetings are open to all interested individuals, groups and government agencies. They will be held at the following times and places:

1. May 3, 1988, 7:00 p.m.
   Lompoc Civic Auditorium
   217 S. 'L' St.
   Lompoc, CA

2. May 5, 1988, 7:00 p.m.
   Goleta Valley Community Center
   5679 Hollister Ave.
   Goleta, CA

The U.S. Air Force is proposing construction and operation of a new space launch complex (SLC-7) for the Titan Centaur space launch vehicle at Vandenberg. The proposed facility represents the latest modification to the Titan program and is a continuation of the USAF Space Launch program at this Santa Barbara county base.

-more-

During the meeting individuals are limited to 5-minute presentations and representatives of groups to 10-minute presentations. If a more lengthy statement is necessary, please provide a written copy and summarize it orally according to the above time limits.

Written statements may be submitted to:

Headquarters Space Division
SD/DEV
ATTN: Mr. Robert Mason
P.O. Box 92969
Los Angeles CA 90009-2960

-30-

A.3 UNITED STATES AIR FORCE NOTIFICATION MAILING TO INTERESTED PUBLIC OFFICIALS, GOVERNMENT AGENCIES, ORGANIZATIONS, AND INDIVIDUALS AND LIST OF RECIPIENTS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS SPACE DIVISION (AFSC)
LOS ANGELES AIR FORCE STATION, PO BOX 92960
LOS ANGELES, CA 90009-2960

15 APR 1988

TO: Interested Public Officials, Agency and Organization Representatives

The Department of the Air Force, Headquarters Space Division is preparing an Environmental Impact Statement (EIS) for the proposed construction and operation of a new space launch complex for the Titan Centaur space launch vehicle at Vandenberg Air Force Base, California.

Public meetings have been scheduled to determine the scope of environmental issues to be addressed and to identify the significant issues related to the proposed action. Two public scoping meetings have been scheduled: (1) May 3, 1988, 7:00 p.m., at the Lompoc Civic Auditorium, 217 South "L" Street, Lompoc, California, and (2) May 5, 1988, 7:00 p.m. at the Goleta Valley Community Center, 5679 Hollister Avenue, Goleta, California. Air Force representatives will be on hand to receive verbal and written comments. To accommodate all those desiring to speak, individuals will be allowed five minutes and those representing an agency or organization will be allowed ten minutes. If you wish to provide extensive comments, request that these be provided in writing and that an oral summary of these comments be provided during the allotted time.

These meetings are the first phase of the Environmental Impact Analysis Process which will culminate in the preparation of a Draft EIS, which is expected to be completed and released for review in the Fall of 1988. A project description, location, and list of anticipated issues to be addressed in the EIS are contained in the attached materials (Attachment 1). A more extensive project description will be available at the public meetings and will be sent upon request.

The Air Force solicits the views of your agency/organization as to the scope and content of the EIS relative to your agency's statutory responsibilities or organization's interests in the proposed project. You may submit comments at the public meetings or by mail. Those sent by mail should be addressed to: HQ Space Division/DEV, Post Office Box 92960, Los Angeles, California 90009-2960, Attention: Mr. Robert Mason. Comments should be sent at the earliest possible date, but no later than May 18, 1988. If you have any questions concerning the proposed project, the public meetings, or the Air Force's Environmental Impact Analysis Process, please contact Mr. Mason at (213) 643-1409.

Sincerely,

WILLIAM E. LEONHARD, JR., Colonel, USAF
Director of Acquisition Civil Engineering

1 Atch.

CONDENSED PROJECT DESCRIPTION AND ENVIRONMENTAL REVIEW PROCESS FOR TITAN CENTAUR SPACE LAUNCH COMPLEX 7 ENVIRONMENTAL IMPACT STATEMENT VANDENBERG AIR FORCE BASE

Introduction

The U.S. Air Force is proposing construction and operation of a Space Launch Complex (SLC) for the Titan Centaur space launch vehicle at Vandenberg Air Force Base (VAFB). The project, known as SLC-7, would serve three overall purposes: (1) to provide a launch facility for an unmanned space vehicle with a payload (Department of Defense satellite), (2) to enable the space vehicle to be launched into a polar orbit, and (3) to provide a facility which may provide for additional future growth potential.

The proposed SLC-7 project will be located at VAFB in the County of Santa Barbara, California. At present, a proposed site and two preferred alternative sites in south VAFB are being considered. Access to VAFB is provided by State Highway 1 or U.S. 101, then west via State Highway 246.

Description of the Proposed Action

The major elements of the SLC-7 project would be typical of those utilized for other space launch facilities, and would consist of the Titan Centaur space launch vehicle, plus the structures and support facilities necessary to achieve its launch and operation. These include an umbilical tower, mobile service tower, and launch platform. In addition, there would be an operations support building, and other structures and facilities for propellant storage, utilities, and communications. The Titan Centaur launch vehicle is a modified Titan 34D designed to deliver a payload of up to 32,000 pounds directly into polar orbit from VAFB.

The project would include the following three phases: (1) construction -- site preparation grading, construction of an operations support building, and other structural work, (2) activation -- completion of the remaining facilities and systems, and (3) operations -- space vehicle assembly and other activities directly associated with launch preparation, vehicle launch, and postlaunch pad refurbishment.

Environmental Compliance

Environmental evaluation of the proposed project will be accomplished in compliance with the regulations and guidelines of the National Environmental Policy Act (NEPA) regulations as implemented by the President's Council on Environmental Quality. Concurrent with the EIS preparation, certain environmental permits and other approvals will be obtained, as necessary.

The proposed construction and operation of space launch facilities at VAFB requires consideration of a range of environmental issues. These reflect both the nature of the proposed action and the distinctive characteristics of the local and regional setting. Environmental issues will be addressed both in terms of the constraints on the project and in terms of the project's potential effect on the environment. At this time, the issues anticipated to be addressed in the EIS include the following:

- Geology and Soils
- Ground and Surface Water
- Plant and Animal Life
- Noise (offshore sonic boom)
- Air Quality
- Hazardous Materials and Propellant Transport
- Cultural and Historic Resources
- Land Use and Socioeconomics
- Visual Considerations
- Transportation

A range of alternatives to the proposed SLC-7 project will also be evaluated in the EIS, including use of VAFB siting alternatives, other launch locations, and the no action alternative.

USAF NOTIFICATION MAILING LIST OF RECIPIENTS

Alan Cranston, U.S. Senator
5757 W. Century Blvd., Suite 620
Los Angeles, CA 90045

Pete Wilson, U.S. Senator
11111 Santa Monica Blvd., Room 915
Los Angeles, CA 90025-3343

Robert Lagomarsino, Congressman
(19th District)
814 State St., Suite 121
Santa Barbara, CA 93101

Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, Suite 809
Washington, DC 20004

Department of Commerce, National Oceanic and
Atmospheric Administration
6010 Executive Blvd.
Rockville, MD 20852

Marine Mammal Commission
1625 Eye Street, NW, Suite 307
Washington, DC 20006

National Marine Fisheries Services
Southwest Regional Office
300 South Ferry Street, Room 2016
Terminal Island, CA 90731

National Marine Fisheries Services
Northwest and Alaska Fisheries Center
7600 Sand Point Way, NE
Seattle, WA 98115

U.S. Department of the Interior
Bureau of Indian Affairs
Central California Agency
1800 Tribute Road, Suite 111
Sacramento, CA 95815

U.S. Department of the Interior
Bureau of Land Management
Attn: Planning Division
2800 Cottage Way, E-2841
Sacramento, CA 95825

U.S. Department of the Interior
Bureau of Land Management
Attn: Division of Planning and Environmental Control
Premier Building, Room 909
1725 "I" Street, N.W.
Washington, DC 20240

U.S. Department of the Interior
Attn: William H. Ehorn, Superintendent
Channel Islands National Park
1901 Spinnaker Drive
Ventura, CA 93003

Interagency Archaeological Services Branch
National Park Service Western Region
450 Golden Gate Avenue
Box 36063
San Francisco, CA 94102

Western Regional Office
National Park Service
450 Golden Gate Ave.
P.O. Box 36063
San Francisco, CA 94102

National Marine Fisheries Services
Attn: Dana J. Seagars, Marine Biologist
300 S. Ferry Street
Terminal Island, CA 90731

Department of the Interior
Office of the Secretary
18th and "C" Streets, N.W.
Washington, DC 20240

Department of Agriculture
Soil Conservation Service
624-B Foster Rd.
Santa Maria, CA 93454

Department of Agriculture
Attn: Keith Gunther, District Ranger
U.S. Forest Service
Santa Lucia Ranger District
1616 Carlotti Dr.
Santa Maria, CA 93454

U.S. Fish and Wildlife Service
Western Regional Office
500 N.E. Multnomah St., Suite 1692
Portland, OR 97232

U.S. Fish and Wildlife Service
Attn: Mr. Gail C. Kobetich
Sacramento Endangered Species Office
2800 Cottage Way, Room E-1823
Sacramento, CA 95825

Department of Housing and Urban Development
450 Golden Gate Avenue
P.O. Box 36003
San Franciso, CA 94102

Department of Labor
Occupational Safety and Health Administration
200 Constitution Avenue, N.W.
Washington, DC 20210

Department of Transportation
400 7th Street, S.W.
Washington, DC 20590

Federal Aviation Administration
Regional Headquarters
P.O. Box 92007
Worldway Postal Center
Los Angeles, CA 90009-2007

U.S. Coast Guard
Marine Safety Division
Attn: U.S. Coast Guard Chief
Union Bank Bldg.
400 Ocean Gate, Suite 709
Long Beach, CA 90822-5399

Environmental Protection Agency
Attn: David Tomsovic
Region 9
215 Fremont Street, 5th Floor
San Francisco, CA 94105

Environmental Protection Agency
Headquarters
401 "M" Street, S.W.
Washington, DC 20460

George Deukmejian, Governor
State Capitol
Sacramento, CA 95814

Ed Davis, State Senator
(19th District)
11145 Tampa Ave., Suite 21-B
Northridge, CA 91326

Gary Hart, State Senator
(18th District)
1216 State St., Suite 507
Santa Barbara, CA 93101

Eric Seastrand, State Assemblyman
(29th District)
523 Higuera Street
San Luis Obispo, CA 93401

Cathie Wright, State Assemblywoman
(37th District)
250 E. Easy St., Suite 7
Simi Valley, CA 93065

California Coastal Commission
Attn: Mr. Peter Doylas
631 Howard Street, 4th Floor
San Francisco, CA 94105

California Department of Fish and Game
3211 "S" Street
Sacramento, CA 95816

California State Clearinghouse
1400 10th Street, Room 121
Sacramento, CA 95816

Governor's Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

California State Historic Preservation Office (SHPO)
P.O. Box 942896
Sacramento, CA 94296-0001

Department of Transportation
Mr. Henry O. Case
P.O. Box 8114
San Luis Obispo, CA 93403

La Purisma Mission State Park
Attn: State Park Ranger
RFD Box 102
Lompoc, CA 93436

Native American Heritage Commission
Mr. Larry Myers, Executive Secretary
915 Capital Mall, Room 288
Sacramento, CA 95814

Regional Water Quality Control Board
Central Coast Regional Office
Attn: William R. Leonard, Executive Director
1102-A Laurel Lane
San Luis Obispo, CA 93401

The Resources Agency of California
Office of the Secretary
1416 Ninth Street
Sacramento, CA 95814

Santa Barbara County
Board of Supervisors
Attn: David M. Yager, Supervisor, 1st District
105 E. Anapamu
Santa Barbara, CA 93101

Santa Barbara County
Board of Supervisors
Attn: Thomas Rogers, Supervisor, 2nd District
105 E. Anapamu
Santa Barbara, CA 93101

Santa Barbara County
Board of Supervisors
Attn: William B. Wallace, Supervisor, 3nd District
105 E. Anapamu
Santa Barbara, CA 93101

DeWayne Holmdahl, Supervisor
4th District
401 E. Cypress
Lompoc, CA 93436-6806

Toru Miyoshi, Supervisor
5th District
312 E. Cook Avenue
Santa Maria, CA 93454-5191

Board of Supervisors
Attn: Chairman
105 E. Anapamu Street
Santa Barbara, CA 93101

Health Care Services
Attn: Ben Gale, Director, Environmental Health Svcs.
315 Camino Del Remedio
Santa Barbara, CA 93110

Health Care Services
Attn: Larry Bishop, Supervisor
715B East Burton Mesa Blvd.
Lompoc, CA 93436

Resource Management Department
Attn: Diane Guzman, Director
123 E. Anapamu St.
Santa Barbara, CA 93101

Lompoc General Plan Advisory Committee
401 E. Cypress
Lompoc, CA 93436

City of Lompoc
City Hall
Attn: Marvin Loney, Mayor
100 Civic Center Plaza
Lompoc, CA 93438

City of Lompoc
City Hall
Attn: Karl Braun, Mayor Pro-Tem
100 Civic Center Plaza
Lompoc, CA 93438

City of Lompoc
City Hall
Attn: Jim Smith, Councilman
100 Civic Center Plaza
Lompoc, CA 93438

City of Lompoc
City Hall
Attn: Gene Stevens, Councilman
100 Civic Center Plaza
Lompoc, CA 93438

City of Lompoc
City Hall
Attn: William S. Mullins, Councilman
100 Civic Center Plaza
Lompoc, CA 93438

City of Lompoc
Dept. of Community Development
Attn: King Leonard, Planning Director
100 Civic Center Plaza
Lompoc, CA 93436

Lompoc Valley General Plan Advisory Committee
Attn: Jane Green, Secretary
100 Civic Center Plaza
Lompoc, CA 93436

Community Development Department
Attn: Director
City of Santa Barbara
735 Anacapa
Santa Barbara, CA 93101

City of Santa Maria
Attn: George S. Hobbs, Jr., Mayor
110 E. Cook St.
Santa Maria, CA 93454-5190

City of Santa Maria
Attn: Thomas B. Urbanske, Mayor Pro-Tem
110 E. Cook St.
Santa Maria, CA 93454-5190

City of Santa Maria
Attn: James A. May, Councilman
110 E. Cook St.
Santa Maria, CA 93454-5190

City of Santa Maria
Attn: Robert Orach, Councilman
110 E. Cook St.
Santa Maria, CA 93454-5190

City of Santa Maria
Attn: Curtis J. Tunnel, Councilman
110 E. Cook St.
Santa Maria, CA 93454-5190

City of Santa Maria
Department of Community Development
110 E. Cook Street
Santa Maria, CA 93454

California Native Plant Society
Attn: President, San Luis Obispo Chapter
P.O. Box 784
San Luis Obispo, CA 93406

Chamber of Commerce
Lompoc Valley
Attn: Mrs. Lee Bohlmann, Executive Director
111 S. I Street
Lompoc, CA 93436

League of Women Voters
Attn: Marty Blum, President
1217-A De La Vina
Santa Barbara, CA 93101

La Purisma Chapter
National Audubon Society
Attn: Debra Argel, President
4269 Constellation Blvd.
Lompoc, CA 93436

Santa Maria Valley Chamber of Commerce
Attn: Charlie Jackson, Executive Director
614 S. Broadway
Santa Maria, CA 93454

Business Council
Attn: James Pace, Chairman
Santa Ynez Indian Reservation
P.O. Box 517
Santa Ynez, CA 93460

Sierra Club (Arguello Group)
Attn: Connie Geiger
1104 W. Hickory
Lompoc, CA 93436

Sierra Club National Headquarters
730 Polk Street
San Francisco, CA 94109

Los Angeles Times
Santa Barbara Edition
1421 State St., Suite A
Santa Barbara, CA 93101

Santa Barbara News
Drawer NN
Santa Barbara, CA 93101

San Luis Obispo Telegram - Tribune
1321 Johnson Avenue
San Luis Obispo, CA 93401

Santa Maria Times
3200 Skyway Drive
Santa Maria, CA 93454

Lompoc Record
115 North 'H' Street
Lompoc, CA 93436

Air Pollution Control District
Attn: James M. Ryerson
5540 Ekwill Street, Suite B
Santa Barbara, CA 93111

County-Cities Area Planning Council
Attn: Gerald R. Lorden, Executive Director
222 E. Anapamu Street, Suite 11
Santa Barbara, CA 93101

Santa Barbara County Parks Department
Attn: Mike Pahos, Director of Parks
610 Mission Canyon Road
Santa Barbara, CA 93105

Santa Barbara County Flood Control
and Water Agency
Attn: James Stubchaer, Engineer-Manager
123 E. Anapamu Street
Santa Barbara, CA 93101

Superintendent of Schools
Attn: Willam J. Cirone
4400 Cathedral Oaks Rd.
Box 6307
Santa Barbara, CA 93160-6307

Office of the Mayor
Santa Barbara City Hall
T.O. Drawer PP
Santa Barbara, CA 93101

Scenic Shoreline Preservation Conference
Attn: Mr. Fred Eissler
4623 More Mesa Drive
Santa Barbara, CA 93110

Historical Society of Santa Maria
Attn: Mr. Ted A. Bianchi, Sr.
144 Palm Court Drive
Santa Maria, CA 93454

La Purisma Mission Association
912 Bluff Drive
Lompoc, CA 93436

Santa Maria Valley Developers, Inc.
428 E South Broadway
Santa Maria, CA 93454

California Wildlife Trust
Attn: Mr. Edward S. Loosli, Director
3435 Hermosa Avenue
Hermosa, CA 90254

The American Cetacean Society
Attn: Millie Payne, Executive Secretary
National Headquarters
P.O. Box 4416
San Pedro, CA 90731

Historical Society (Lompoc Valley)
Camp Cook Road
Lompoc, CA 93436

Hubbs-Sea World Research Institute
1700 South Shores Road
San Diego, CA 92109

Planning and Conservation League
Attn: Larry Moss
717 "K" Street, Suite 209
Sacramento, CA 95814

Central Coast Indian Council
Attn: Director
728 -13th Street
Suite 210
Paso Robles, CA 93346

A.4 NEWSPAPER PUBLICATIONS OF PUBLIC NOTICE

NEWSPAPER PUBLICATIONS

The USAF Public Notice* of the Scoping Meetings for the proposed SLC-7 project at Vandenberg Air Force Base appeared in the following newspapers:

- Lompoc Record
  - April 17, 1988
  - April 24, 1988
  - April 28, 1988
- Los Angeles Times, Santa Barbara Edition
  - April 17, 1988
  - April 24, 1988
  - April 28, 1988
  - May 1, 1988
- San Luis Obispo County Telegram-Tribune
  - April 16, 1988
  - April 24, 1988
  - April 28, 1988
- Santa Barbara News
  - April 17, 1988
  - April 24, 1988
  - April 29, 1988
- Santa Maria Times
  - April 17, 1988
  - April 24, 1988
  - April 28, 1988

* See following page for example of published notice.

California.

three months in a 1937 for petty theft Fairbanks managed trouble for the next

weird, what are you going to do?" he asks. "I hope to find some good Christian people who aren't like Jimmy Swaggart, Jimmy Bakker and Oral Roberts."

Security Pacific to close branches

LOS ANGELES (AP) — Security Pacific National Bank will close 40 to 60 branches across the state over the next three to six months, laying off an unspecified number of employees, officials for the state's second-largest bank announced.

Executives with Security Pacific declined to say how many of the bank's 10,000 employees would lose their jobs. They said some workers would be transferred to other branches and some vacant jobs would be left unfilled.

But the Los Angeles Times, quoting unnamed industry sources, reported in today's editions that the average Security Pacific branch employees 14 to 15 people, meaning between 560 to 900 employees could lose their jobs.

Bank officials said most of the closings would take place in Southern California, where most of Security Pacific's 600 branches are located. They declined to release a list of branches to be closed

Local branches not among the closures

None of Security Pacific National Bank's six branches in San Luis Obispo County is among those that will be closed in the next few months.

"My understanding is that none up here (in San Luis Obispo County) will be involved," said Tiny Westbrook, manager of the Atascadero branch.

Managers in most of the county's other branches agreed with Westbrook, indicating that most of the 40-to-60 closures are expected to be in the Los Angeles area.

Susan Taha, director of corporate communications in Los Angeles, said she could not confirm that none of the county branches will be closed. "But," she said, "they have not been selected at this time."

on county split proposal

blishing the new coun-

s filed in San Diego actions naming the re to be entered in ive a state attorney e.

contends the commis- county assets and lia-

bilities improperly.

It also said the commission neglected to assign a fair share of the county's indebtedness to the proposed new county.

"To permit an election based on invalid determinations and conditions would constitute a fraud on the voters," the suit contends.

ine Wooden Shutters
alan's draperies
544-9405

PUBLIC NOTICE

THE U.S. AIR FORCE HEADQUARTERS SPACE DIVISION ANNOUNCES **PUBLIC MEETINGS** TO SOLICIT FROM THE PUBLIC THE SCOPE OF ISSUES TO BE ADDRESSED AND THE SIGNIFICANT ISSUES TO BE ANALYZED IN DEPTH IN THE ENVIRONMENTAL IMPACT STATEMENT FOR AN AIR FORCE SPACE LAUNCH COMPLEX (TITAL CENTAUR) PROJECT AT VANDENBERG AIR FORCE BASE, CA. THESE MEETINGS ARE OPEN TO ALL INTERESTED INDIVIDUALS, GROUPS AND GOVERNMENTAL AGENCIES AND WILL BE HELD ON **MAY 3, 1988 BEGINNING AT 7:00 P.M. AT LOMPOC CIVIC AUDITORIUM, 217 S. 'L' STREET IN LOMPOC, CA.** AND ON **MAY 5, 1988 BEGINNING AT 7:00 P.M. AT GOLETA VALLEY COMMUNITY CENTER, 5679 HOLLISTER AVENUE IN GOLETA, CA.** TO ACCOMMODATE ALL SPEAKERS, INDIVIDUALS WILL BE ALLOWED FIVE MINUTES. THOSE REPRESENTING GROUPS WILL BE ALLOWED TEN MINUTES TO SPEAK. EXTENDED COMMENTS SHOULD ALSO BE SUBMITTED IN WRITING. WRITTEN STATEMENTS MAY ALSO BE SENT DIRECTLY TO HQ SD/DEV, ATTN: MR. ROBERT MASON, P.O. BOX 92960, LOS ANGELES, CA 90009-2960. WRITTEN STATEMENTS SHOULD BE MAILED TO REACH HQ SD BY MAY 17, 1988. FOR ADDITIONAL INFORMATION CALL MR. MASON AT (213) 643-1409.

PUBLIC NOTICE

A.5 PUBLIC SCOPING MEETINGS HANDOUT, LIST OF SPEAKERS, LIST OF ATTENDEES, TEXT OF AIR FORCE PRESENTATION, AND AVAILABILITY OF TRANSCRIPTS

Environmental Impact Analysis Process

HEADQUARTERS SPACE DIVISION
PUBLIC SCOPING MEETING

PROPOSED CONSTRUCTION AND OPERATION
OF SPACE LAUNCH COMPLEX 7

VANDENBERG AIR FORCE BASE, CALIF
3 MAY 1988

DEPARTMENT OF THE AIR FORCE

PUBLIC SCOPING MEETING
ENVIRONMENTAL IMPACT STATEMENT PROCESS
PROPOSED TITAN CENTAUR SPACE LAUNCH COMPLEX 7
VANDENBERG AIR FORCE BASE
MAY 3, 1988
7:00 P.M. - 10:00 P.M.

The purpose of this meeting is to solicit comments from community interest groups, individuals, elected officials, and governmental agencies, on the scope of an Environmental Impact Statement (EIS). This scoping meeting initiates the Environmental Impact Analysis Process which will evaluate potential effects of a proposed U.S. Air Force project. The proposed project involves construction and operation of Space Launch Complex 7 (SLC-7) at Vandenberg Air Force Base and is described in the attached project description.

Those who desire to comment on the EIS may do so by completing the attached SPEAKER'S CARD or WRITTEN STATEMENT and presenting it to an Air Force representative at this meeting. In order to be sure there is time available for all persons who wish to comment, individuals who wish to speak will be allowed five minutes. Persons representing groups of individuals will be allowed to speak for ten minutes. Verbal comments of considerable length should also be submitted in writing either at the meeting or mailed directly to HQ Space Division, Attention: Mr. Robert Mason, Post Office Box 92960, Los Angeles, California 90009-2960. If you wish to be placed on the mailing list for future notification of meetings and document availability, please print you name and mailing address on an attendee list at the entrance table.

SLC-7 is a Federal Project subject to environmental review in compliance with the National Environmental Policy Act regulations as implemented by the President's Council on Environmental Quality (CEQ). The CEQ regulations direct Federal agencies which have made a decision to prepare an Environmental Impact Statement to engage in a public scoping process. The purpose of this scoping process is to identify public and agency concerns, clearly define the environmental issues and alternatives, identify related issues, and identify State and local agency requirements which must be addressed in the EIS. Following the public scoping process, a draft EIS will be prepared and made available for public review and comment. It is anticipated that the draft Environmental Impact Statement will be completed and released for review in the Fall of 1988. There will then be a public hearing to provide an opportunity for public comment. The final EIS will reflect comments received on the draft document.

Thank you for your attendance and participation.

PROJECT DESCRIPTION AND ENVIRONMENTAL REVIEW PROCESS FOR TITAN CENTAUR SPACE LAUNCH COMPLEX 7 ENVIRONMENTAL IMPACT STATEMENT VANDENBERG AIR FORCE BASE

INTRODUCTION

The U. S. Air Force is proposing construction and operation of a space launch complex (SLC) for the Titan Centaur space launch vehicle at Vandenberg Air Force Base (VAFB). The project, known as SLC-7, would serve three overall purposes: (1) to provide a launch facility for an unmanned space vehicle with a payload (Department of Defense satellite), (2) to enable the space launch vehicle to place its payload into polar orbit, and (3) to provide a facility which may provide for additional future growth potential.

SPACE LAUNCH HISTORY

VAFB has become a base of operations for space launch activities of the Scout, Delta, Atlas, Titan, and Space Shuttle space launch vehicles. These programs have been ongoing for about the past 25 years. Space Launch Complex 6, the most recent of these facilities, has been placed in minimum facility caretaker status.

The proposed Titan Centaur facility represents the latest modification to the Titan program and is a continuation of the USAF Space Launch program at VAFB. The Titan Centaur is designed as an unmanned vehicle capable of transporting payloads (i.e., satellites).

DESCRIPTION OF THE PROPOSED ACTION

The proposed SLC-7 project would be located at VAFB in the County of Santa Barbara, California. VAFB is located about 70 miles northwest of the City of Santa Barbara, and about 140 miles northwest of Los Angeles (see Figure 1, Regional Project Location Map). VAFB is an area of about 98,400 acres and is bisected by State Route 246 into North VAFB and South VAFB. Access to the site is provided by State Highway 1 or U.S. 101, then west via State Highway 246. At present, the proposed site, known as Cypress Ridge, and two preferred alternate sites are being evaluated for the SLC-7 project as shown in Figure 2, Site Location Map.

The project elements consist of the actual Titan Centaur space launch vehicle, plus the structures and facilities necessary to achieve its launch and operation. These elements are shown in Figure 3, Schematic Diagram, SLC-7 Site and Facilities. The Titan Centaur is a modified Titan 34D, with a configuration as illustrated in Figure 4, Titan Centaur Space Launch Vehicle. As shown, the 200-foot high vehicle is comprised of a core vehicle, two solid rocket motors, and a payload fairing. It has a maximum payload capacity of 32,000 pounds. The launch vehicle will be powered by two solid rocket motors and a two stage core vehicle which uses liquid propellant. The vehicle has a thrust capacity of 2.9 million pounds and can deliver/launch its payload directly into a polar orbit from VAFB.

The proposed support structures and facilities for the SLC-7 project include the launch pad structure, umbilical tower, and mobile service tower. In addition, there would be an operations support building, and other ancillary structures and facilities such as propellant storage areas, access roads and parking, and underground systems for water, communications, and utilities (see Figure 3). The project also would utilize existing on-base facilities to the maximum extent possible. Water would be obtained from an existing system, and industrial wastewater would be disposed of via the existing treatment facility at the nearby SLC-6 site. Most of the new structures which are planned would be within the launch area itself and be designed and constructed for the specific use of the proposed project. They would be typical of those utilized for other Titan missions at VAFB.

Launch Complex

Consists of the launch pad, mobile service tower, umbilical tower, operations support building, and other support facilities as described below.

Launch Pad - a U-shaped concrete structure which includes a three-level launch service structure beneath the pad itself, with shops to support integration of the space vehicle for launch. A "flame duct" to channel launch exhaust and deluge water slopes from the center of the U-shaped launch pad to a retention basin. The launch pad would be designed to accommodate the mobile launch platform for the Titan Centaur, with additional growth potential.

Mobile Service Tower - a self-propelled structure nearly 300 feet tall which encloses the Titan Centaur (see Figure 3). The tower would contain a 200-ton crane and a clean enclosure, and would be used for access to the space launch vehicle during final assembly and test operations.

Umbilical Tower - mounted on a mobile launch platform, it is used to support and interface the vehicle with the electrical, fuel, water, and air conditioning systems on the platform and other areas. It also provides personnel access to the various levels of the space vehicle and mobile access tower during final assembly and launch preparation.

Operations Support Building - serves as the base of operations for the launch preparation and would be located within the launch site area, approximately as shown in Figure 3. The primary facilities are communications and conference rooms and offices. A maximum of about 300 personnel would work in the building on a 24-hour basis during the integration of the space vehicle on the launch pad.

Other Facilities - include storage for liquid propellants, fuel incinerator, video tower, and sanitary sewer plant. There will be underground systems for water, utilities, and communications (telephone, microwave, and telemetry). Access roads, trailer pads, and parking areas for personnel also will be constructed. Consideration would be given for future growth in the design elements for some of these facilities. To restrict access, there would be patrol roads, security fencing, and a clear zone surrounding the launch site area. The Air Force is investigating vertical assembly of the space launch vehicle offsite. It is anticipated that this building would be located in the vicinity of SLC-6, north of the SLC-7 project area. Implementation of this vertical integration building would also include an access road for trucks and personnel vehicles, plus a separate tow route for transport of the assembled space vehicle to the launch site.

Safety

Safety is an integral component of the space launch vehicle programs. The requirements of the Military System Safety Program Plan provide compliance with Federal, State, and USAF Occupational Safety and Health regulations and are strictly followed. Safety regulations govern siting of launch facilities, establishment of launch safety zones, and use of hazardous materials. Numerous safety systems are incorporated into the project design, including multiple back-up or check systems, construction of physical barriers and facilities, and adherence to specified operations and emergency procedures. Safety procedures for non-project personnel have been

previously established. Prior to launch, the Air Force patrols coastal waters and surrounding areas, and monitors train movement through VAFB. Jalama Beach is closed to public access prior to a space launch. Before launch procedures begin, the Air Force encourages that only essential personnel remain on offshore oil rigs in the path of the space vehicle over-flight.

Quantity-Distance Criteria - QD is used to establish safe distances from space vehicle on-pad and launch activities and are governed by USAF Explosives Safety Standards. The criteria utilize the TNT explosive equivalent of fuel aboard a loaded space vehicle to determine safe distances from space launch operations. For the Titan Centaur, this equivalent amount is 72,000 pounds. This means that the closest allowable distance of an inhabited building to the loaded launch vehicle is 1,700 feet, and the closest allowable distance to an uncontrollable public thoroughfare is 1,000 feet. As planned, the project meets these criteria.

Project Schedule and Personnel

Onsite project activities would occur in three phases: (1) Construction, which would include site preparation grading, and structural work, (2) Activation, which would include construction of the remaining systems and facilities, and (3) Operations, which would involve space vehicle assembly and other activities directly associated with launch preparation, launch, and postlaunch pad refurbishment.

Although these activities have their own timing and personnel requirements, there would be some overlap as work proceeds from one phase to the next. About three years of project design work would be required, with an overlapping construction period of four years. Personnel requirements are estimated to fluctuate during the construction phase; a maximum of about 300 persons would be anticipated. Personnel would also vary greatly during the project operations phases of prelaunch, launch, and postlaunch refurbishment, a maximum of about 400 persons is anticipated.

ENVIRONMENTAL REVIEW PROCESS

Environmental Analysis - The SLC-7 is a project of the Federal Government and is subject to national environmental regulations and guidelines. These require that an Environmental Impact Statement (EIS) be prepared, in compliance with the National Environmental Policy Act (NEPA) as implemented by the President's Council on Environmental Quality (CEQ).

Environmental Issues - The proposed construction and operation of launch facilities at Vandenberg Air Force Base require consideration of a range of environmental issues. These reflect both the nature of the proposed action and the distinctive characteristics of the local and regional setting. Environmental issues will be addressed both in terms of the constraints on the project and in terms of the project's potential effect on the environment. At this time, the issues anticipated to be addressed in the EIS include the following:

- Geology and Soils
- Ground and Surface Water
- Plant and Animal Life
- Noise (offshore sonic boom)
- Air Quality
- Hazardous Materials and Propellant Transport
- Cultural and Historical Resources
- Land Use/Socioeconomics
- Visual Considerations
- Transportation

Environmental Permitting

Concurrent with preparation of the EIS will be the acquisition of various permits and approvals relative to specific project/environmental and construction activities, which include the following:

- Air Quality Permitting
- Water Quality Permitting
- Compliance with the National Historic Preservation Act (Section 106 Cultural Resources)
- Compliance with the National Endangered Species Act (Section 7 Threatened and Endangered Species)
- Federal Coastal Consistency Determination (Coastal Zone Management)
- Other applicable Federal, State, and County regulations

Project Alternatives

Siting Alternatives - Within VAFB, two alternative sites are being considered and will be evaluated in detail in the Environmental Impact Statement being prepared for this project.. Known as Boat House Flats and Vina Terrace, they are located within South VAFB and south of the Space Shuttle

launch (SLC-6) area (See Figure 2). The sites meet applicable noise and over pressure limitations and the Safety Quantity - Distance (QD) criteria which specify closest allowable distances for: (1) inhabited buildings and (2) public thoroughfares (includes Southern Pacific Railroad).

Modification/Use of Existing VAFB Launch Complex - Modification/redevelopment of an existing launch complex at VAFB will be considered. Existing launch facilities will be reviewed for location and access requirements and potential constraints for modification.

Other Facility - Cape Canaveral Air Force Station - An alternative to the proposed action is to provide a space launch complex at an existing facility other than Vandenberg AFB. The only other location with facilities necessary to support a space launch complex such as the one proposed is at Cape Canaveral, Florida.

Other Launch Locations - Other locations which do not currently have space launch facilities or associated support facilities, from which a direct launch into polar orbit is possible.

No Action - If the No Action Alternative were adopted, no facilities for launching the Titan Centaur would be developed.

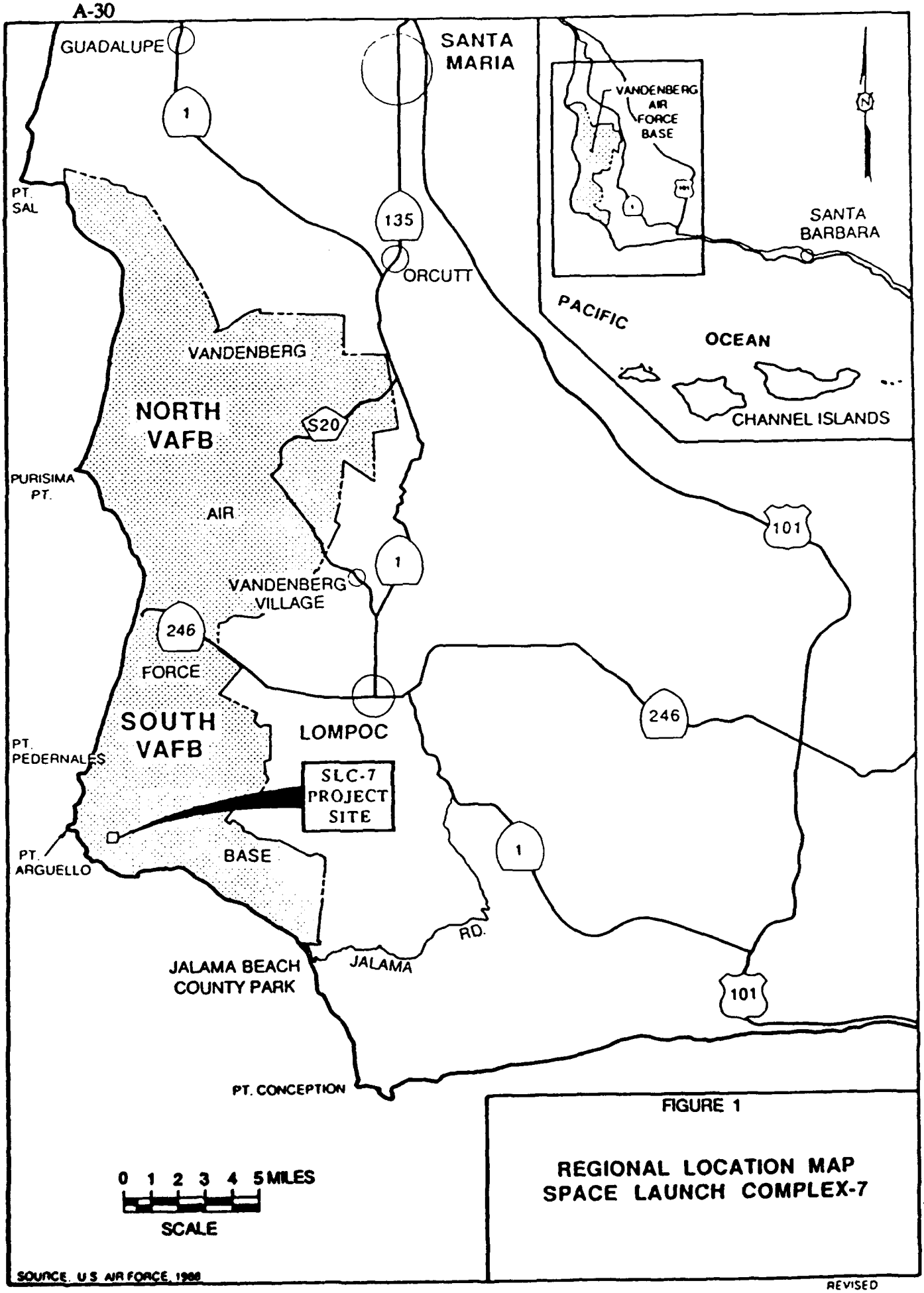

FIGURE 1

REGIONAL LOCATION MAP
SPACE LAUNCH COMPLEX-7

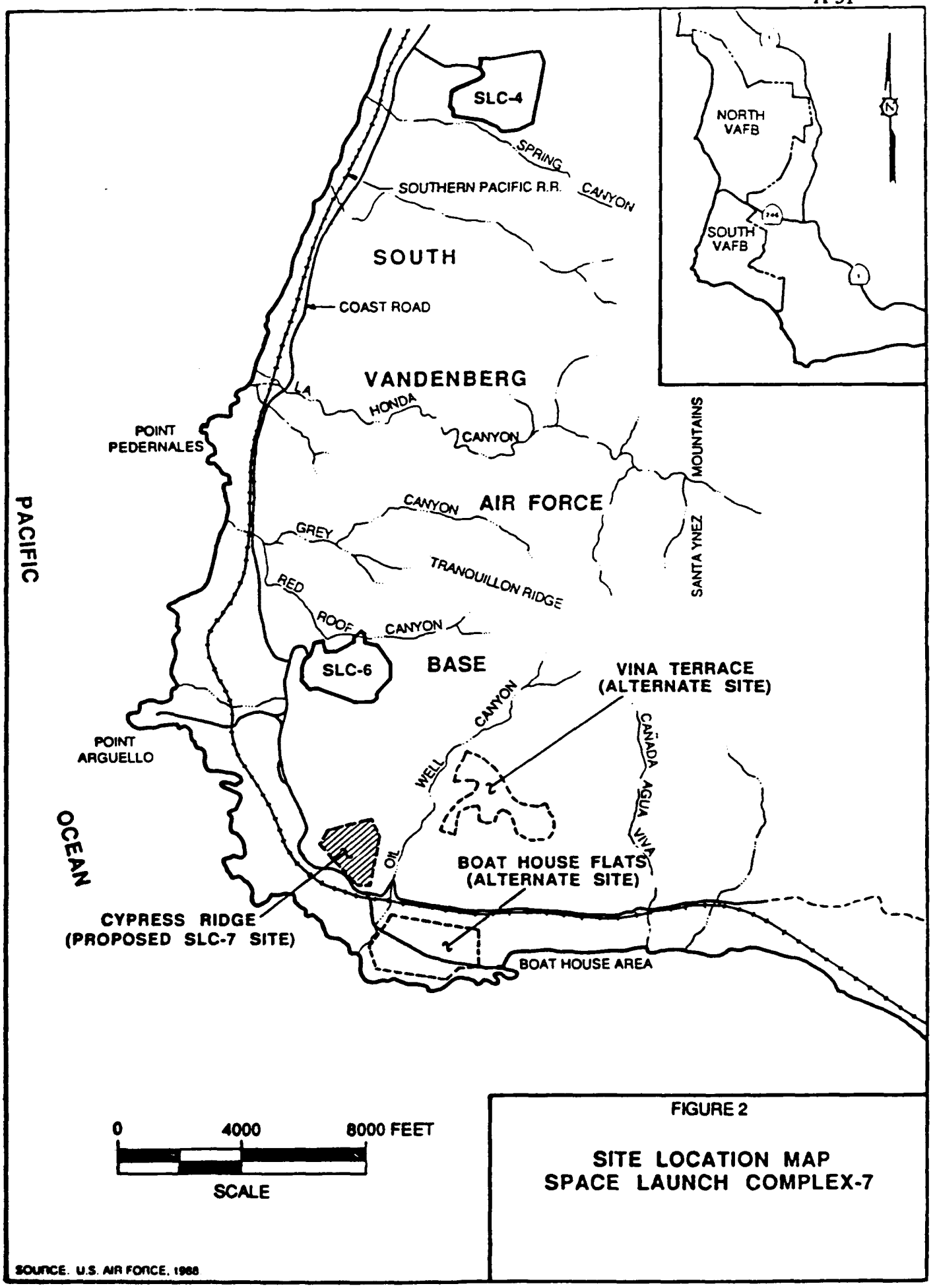

FIGURE 2

SITE LOCATION MAP
SPACE LAUNCH COMPLEX-7

SOURCE. U.S. AIR FORCE, 1988

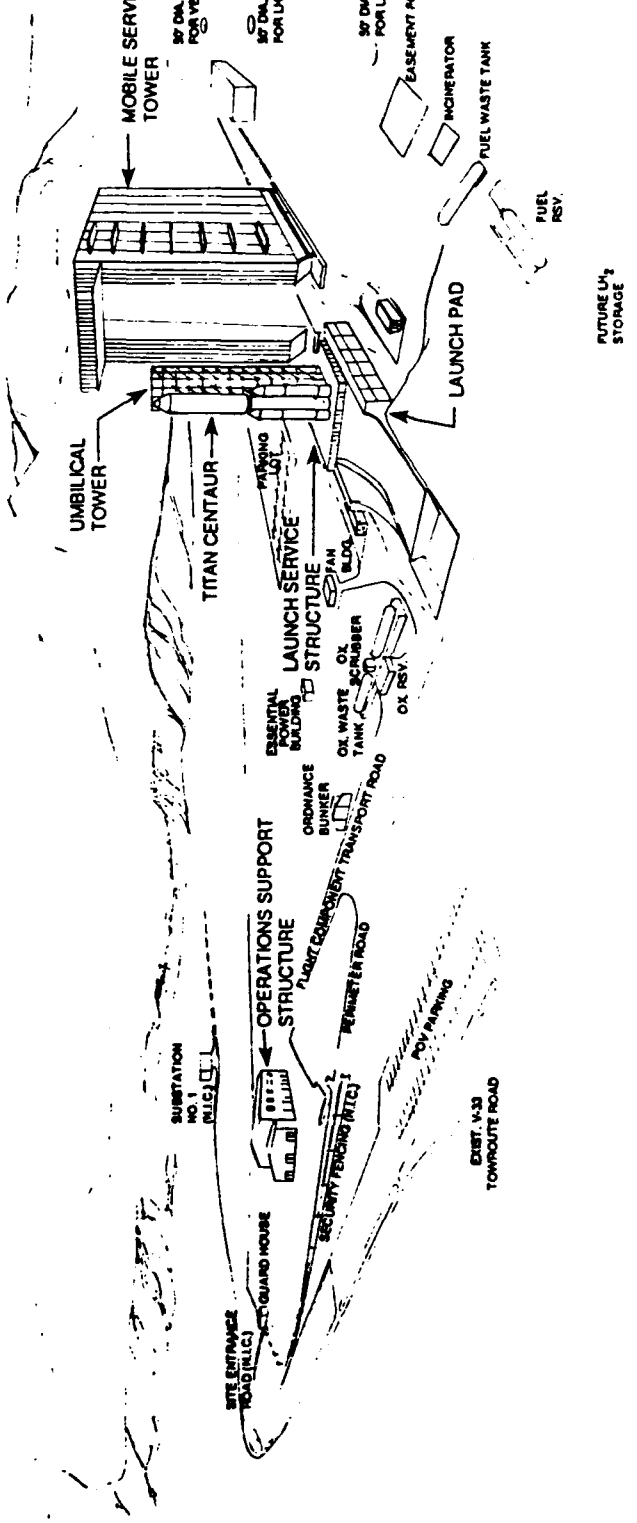

FIGURE 3

SCHEMATIC DIAGRAM SLC-7 SITE AND FACILITIES

SOURCE: U.S. AIR FORCE, 1988.

REVISED 3/30/88

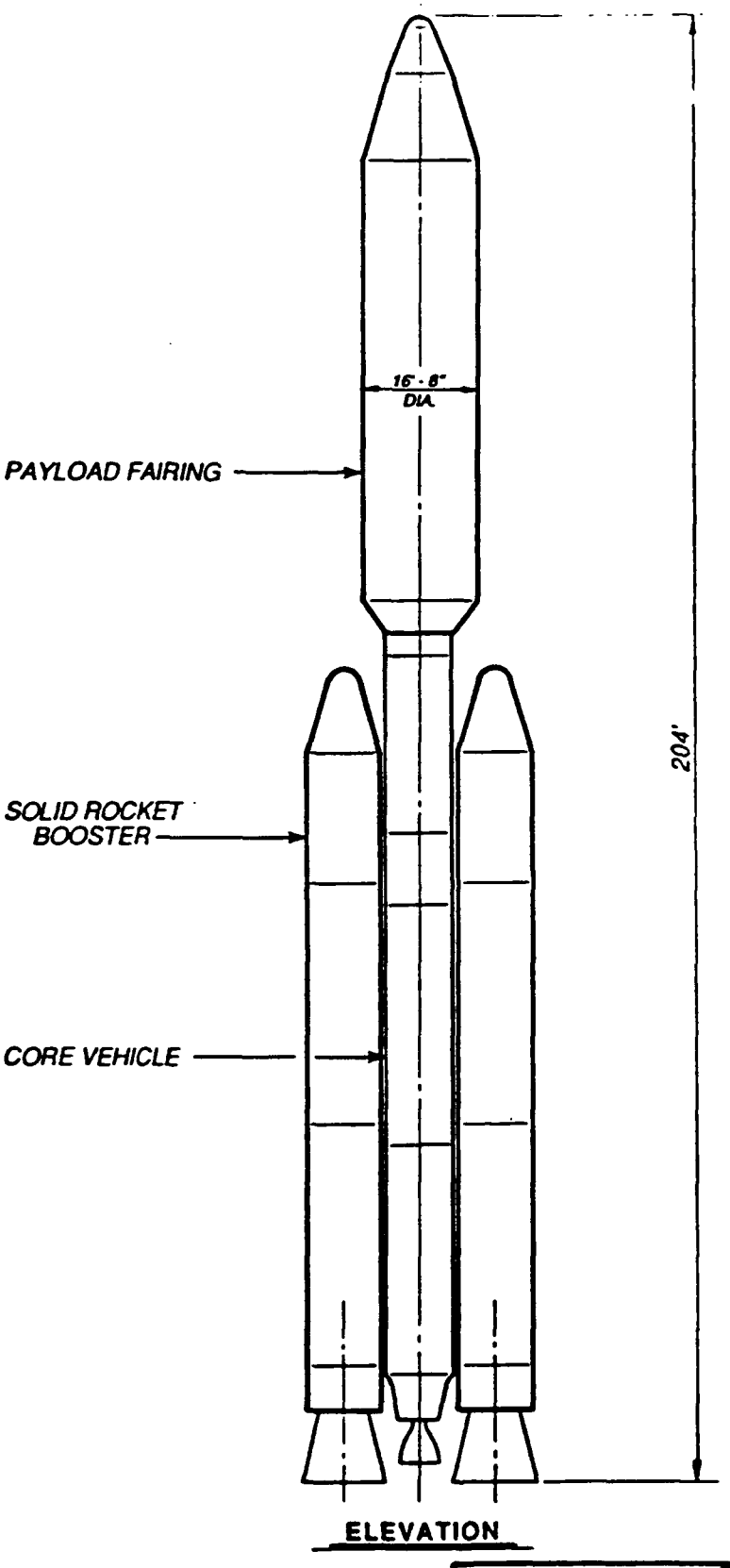

FIGURE 4

TITAN CENTAUR SPACE LAUNCH VEHICLE

SOURCE: U.S. AIR FORCE, 1988

REVISED 3/29/88

WRITTEN STATEMENT

U.S. AIR FORCE PROPOSED TITAN CENTAUR SPACE LAUNCH COMPLEX 7 ENVIRONMENTAL IMPACT STATEMENT PROCESS VANDENBERG AIR FORCE BASE, CALIFORNIA

(Submit to Air Force representative at Scoping Meeting on May 5, 1988 or mail to: HQ Space Division/DEV, Attention: Mr. Robert Mason, Post Office Box 92960, Los Angeles, California 90009-2960. Mailed statements should be submitted by May 17, 1988.)

Submitted By: _____

Name (please print)

_____

Street Address

_____

City State Zip

SPEAKER'S CARD
U.S. AIR FORCE PROPOSED TITAN CENTAUR SPACE LAUNCH COMPLEX 7
ENVIRONMENTAL IMPACT STATEMENT PROCESS PUBLIC SCOPING MEETING

May 3, 1988 - Lompoc Civic Auditorium, 217 South 'L' Street, Lompoc, CA

PLEASE FILL OUT AND SUBMIT THIS CARD IF YOU WISH TO SPEAK

Please limit oral statements to 5 minutes for individuals and 10 minutes for group/agency representatives. Thank you.

(please print)

Name: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Representing: _____

_____

Issue(s) of Concern: _____

_____

NOTE: CONTENTS OF THE MAY 5, 1988, SCOPING MEETING HANDOUT WERE THE SAME AS THE MAY 3, 1988, SCOPING MEETING HANDOUT.

Environmental Impact Analysis Process

HEADQUARTERS SPACE DIVISION
PUBLIC SCOPING MEETING

PROPOSED CONSTRUCTION AND OPERATION
OF SPACE LAUNCH COMPLEX 7

VANDENBERG AIR FORCE BASE, CALIF
5 MAY 1988

DEPARTMENT OF THE AIR FORCE

PUBLIC SCOPING MEETINGS SPEAKERS

The following individuals presented oral statements at the Scoping Meetings:

MAY 3, 1988 - LOMPOC, CALIFORNIA

SPEAKERS	CONCERNS
Ray Kunze Lompoc, California	Loss of access to beaches and unnecessary expenditure of tax dollars.
George A. Johnson Lompoc, California	Stability of the community of Lompoc.
Tom Gooch Lompoc, California	Loss of public access to Jalama Beach.

MAY 5, 1988 - GOLETA, CALIFORNIA

SPEAKERS	CONCERNS
Charles R. Eshelman Goleta, California	VAFB regard for public safety, range safety systems, and competence, integrity and motives of VAFB personnel.
John M. Baucke Bixby Ranch Company Santa Barbara, California	Impacts on land use and public safety.

PUBLIC SCOPING MEETINGS ATTENDANCE

The following individuals attended the Scoping Meetings:

MAY 3, 1988 - LOMPOC, CALIFORNIA

Anthony Blackett
Walter B. Burnett
S. R. Dakell
Darlene Dial
Terry Dial
David A. Dumatt
Andrew J. Dunkap
Robert Dwyer
Scott Feirn
Tom Gooch
Fred Halneka
Kathryn L. Harter
George Johnson
Dominic Keen
Ray Kunze
Larry Lane
Donn Robertson
Richard Runyen
Elaine Schneider
Domenic Signorelli
Maria Slizys
Aubrey B. Sloan
Don Smith
Bea Smith
Steen W. Steensen
Steve Strachan
Barbara Tenera-Russell
Russ Thompson
Frank Ugolini
Tad Weber
David Wert
Dorene Wettck

MAY 5, 1988 - GOLETA, CALIFORNIA

John M. Bauke
Donn Benn
Kenneth C. Bornholdt
Steve Bridge
C. R. Eshelman
Deborah Pontifex
Susan Strachan

PRESENTATION FOR SLC-7

PUBLIC SCOPING MEETING

3 & 5 MAY 88

PRESENTED BY: COL LEONHARD (SD/DE)

Good evening ladies and gentlemen, I'm Colonel Bill Leonhard, the Director of Acquisition Civil Engineering for Space Division of the U.S. Air Force Systems Command. On behalf of myself and the Air Force, I would like to welcome you here tonight. My Directorate is responsible for the design and construction, and the environmental analysis for Systems Command facilities and programs at Vandenberg Air Force Base, including the project for which we are here this evening, the proposed Space Launch Complex 7 for the Titan Centaur space launch vehicle.

I would like to take this opportunity to introduce the members of the Air Force team here tonight who are involved with the environmental analysis for the proposed Space Launch Complex 7. To my left is Lt Col. Mike Hayner who is with the Western Space and Missile Center at Vandenberg Air Force Base; to his left is Mr. Robert Mason, a member of my staff and the manager of the environmental analysis for Space Launch Complex 7; and to his left is Mr. Tim Lassen representing Environmental Solutions, Incorporated, the Air Force contractor conducting the environment analysis for the proposed project.

Also in attendance this evening, though not here on the stage, are representatives from the Vandenberg and Space Division Public Affairs Offices.

Before we begin, we ask that for the health and comfort of all in attendance, that you refrain from smoking in the the auditorium, thank you.

To begin the proceeding this evening, I would like to take a few minutes to: outline the purpose of this meeting; to discuss the

environmental impact analysis process for the proposed project; and finally, to review the Air Force's proposal for the construction and operation of Space Launch Complex 7, and the other alternatives which we are evaluating.

This meeting tonight is a Public Scoping Meeting to assist the Air Force in the preparation of an Environmental Impact Statement, or EIS, for the proposed Space Launch Complex 7. As part of the the EIS process, the Air Force solicits from the public, public groups, public officials and governmental agencies, issues that should be included in the EIS. This scoping meeting is one part of the scoping process the Air Force has initiated for the proposed Space Launch Complex 7. This evening's meeting is an opportunity for you to be to be involved in the Space Launch Complex 7 EIS.

It is important for all in attendance this evening to understand that this is not a question and answer meeting. Rather, it is an opportunity for you to participate in the EIS process and formally identify issues which you believe should be included in the EIS. It is also an opportunity for Air Force representatives to hear these issues first hand.

It is equally important to understand that Congress and the Air Force have not made a decision as to whether Space Launch Complex 7 will be constructed at Vandenberg or the specific location on Vandenberg. In addition, those of us representing the Air Force here tonight, are not in the position to make any decisions for the Air Force, rather we will be providing the results of the EIS process, including the results of this scoping meeting, to higher headquarters where the final decision will be made.

Upon the conclusion of the EIS scoping process later this month, we will begin the preparation of a Draft EIS which will address the environmental consequences of the proposed construction and operation of Space Launch Complex 7, and the Titan Centaur at Vandenberg. Included within this Draft EIS will be a discussion of the various alternatives to the proposed action. This Draft EIS is scheduled for release to the public and governmental agencies in the fall of 1988. The Draft EIS will be available for forty-five days for public and agency review and comments. During this forty-five day review and comment period, the Air Force will hold Public Hearings to solicit comments on the Draft EIS. Upon completion of the public and agency review and comment period, the Air Force will respond to all comments received on the Draft EIS and publish these responses in a Final EIS that will be released early in 1989. The Air Force will also publish a Record of Decision in the spring of 1989, which will document the findings of the EIS process and the Air Force's decision on how to proceed with the proposed project.

Before I review the proposed project and its alternatives, I would like to discuss the procedures we will follow this evening. Those wishing to speak should fill out the Speakers Sign-up Card attached to the Space Launch Complex 7 information packet you received as you arrived this evening, and provide it to one of the uniformed Air Force members available. If you did not pick up a copy of the packet, copies are available in the lobby. Upon completion of the description of the proposed project, we will call up to the podium those who have indicated on the sign-up card that they wish to address this meeting. When you reach the podium we would like you to state your name for the record. If you are representing an agency or group we would ask that you also identify the agency or group. These proceeding are being recorded by a court reporter

and a back up audio tape to ensure an accurate record of the issues raised.

To ensure that all wishing to speak have an opportunity, we are requesting that if you are representing yourself that you please limit your comments to no more that five minutes. If you are representing a group or agency, you will be given ten minutes. We ask that groups select one individual to speak for the group. In fairness to other speakers, we appreciate your efforts to stay within these time limits. We also request that you try and make your comments specific to the EIS process, and that you limit yourself to issues you believe should be included in the EIS. Again, we are here to receive your inputs to the EIS process not to debate the relative merits of the proposed program.

If you have prepared a written statement, we ask that you leave us a copy of the statement. If the statement is lengthy, we ask that you limit your oral presentation to a summary of these inputs. Whether your inputs are received in writing or orally, they will be given the same consideration. If you would rather present a written statement, that can be accomplished in several ways. You will notice that in the information packet, we have included a blank sheet specifically for written statements. These can either be handed in tonight as you leave, or mailed to the address on the top of the sheet. If you have a prepared written statement and would prefer not to address the meeting, you can provide that to us when you leave. Or if you would rather, you can mail written statements directly to the address in the handout at any time within the next couple of weeks. However, we do request that, whichever method you use, that your written statements be mailed to reach my office in Los Angeles by the 17th of May.

Those of you wishing to be included on the mailing list for the Draft and Final EIS, and the Record of Decision, can do so in several ways. First, if you have signed up to speak or submit a written statement either this evening or up to the 17th of May, you will automatically be included on the mailing list. If you do not wish to speak tonight and are not planning on submitting any comments in writing, we have placed a mailing list sign up sheet at the information table in the lobby. Finally, if you later decide you would like to be on the mailing list and have not done either of the two above, please drop us a note at the address in the information packet and we will include you on the mailing list. To ensure that we have your correct address and name, we request that you print carefully and include your complete address and zip code.

For ease of discussion of the proposed project and its alternatives, we have included a description of the proposed action, its alternatives, and those environmental issues we are anticipating, in the information packet you have received. Also included in the information packet are a number of figures that show the general area of Vandenberg, the proposed location of Space Launch Complex 7, the alternative sites being considered, an artist rendition of the launch complex, and a diagram of the Titan Centaur. These same figures, plus several additional figures are located on posters in the auditorium. You may find it helpful to follow along in the information packet as I discuss the project.

As I indicated earlier, the Air Force is proposing to construct and operate a new space launch complex at Vandenberg for the unmanned Titan Centaur space launch vehicle. This new complex will be known as Space Launch Complex 7. As proposed, it would provide an

additional launch facility at Vandenberg for the launching of Department of Defense satellites into polar orbit.

Those of you familiar with Vandenberg know that the Air Force has been launching various space boosters from the base for over twenty-five years, including Scout, Delta, Atlas and Titan vehicles. The Space Shuttle Launch Complex 6, as most of you know has recently been placed in mothball status at Vandenberg. The Titan Centaur represents the latest modification to the Titan program and is a continuation of the Titan program at Vandenberg.

Vandenberg covers over 98,000 acres and is generally divided in half by State Route 246 into North and South Vandenberg. This is shown in Figure 1 of the packet. Except for the Delta vehicle, all space launch activities occur from South Vandenberg. The preferred site for Space Launch Complex 7 is an area on South Vandenberg known as Cypress Ridge. It is located approximately one and half miles south of the Space Shuttle launch complex. This is shown on Figure 2 in the handout. We have also identified two alternative sites on South Vandenberg for Space Launch Complex 7, they are also shown on Figure 2. These two sites are known as Boathouse Flats and Vina Terrace.

The proposed project consist of the Titan Centaur vehicle and the facilities necessary to launch the vehicle. Figure 3 of your handout shows an artist rendition of the various structure proposed for Space Launch Complex 7. These would include the launch pad and flame deflector, the Mobile Service Tower, the Umbilical Tower and associated support facilities and structures. These structures would be the same whether the complex is constructed at the proposed site or at one of the alternative sites.

The Titan Centaur is depicted on Figure 4 of your handout. The core vehicle is a modified Titan 34D, which has been launched from Space Launch Complex 4 at Vandenberg for the past several years. The Titan Centaur is a 200 foot vehicle that is comprised of a two stage core vehicle, two solid rocket motors, the Centaur Upper Stage and the payload fairing that houses the satellite. The vehicle has a maximum thrust of 2.9 million pounds and can deliver a 32,000 pound satellite into polar orbit.

The requirement for the Titan Centaur is driven by the requirement to launch larger Department of Defense satellites. With the backlog of Space Shuttle flights due to the Challenger accident and the resulting limitation put on the maximum weight the Space Shuttle will be able to carry once it returns to operation, the Department of Defense lacks the capacity to place some of its larger satellites into polar and high inclination orbits from Vandenberg. This situation resulted in a decision to evaluate the introduction of the Titan Centaur at Vandenberg. Therefore, the Air Force proposes the construction of Space Launch Complex 7 to support the Titan Centaur.

The potential sites on Vandenberg for construction and operation of space launch complexes are limited by a combination of topographical features, such as steep slopes, which restrict construction, and safety clear zone that are required around launch complexes and support facilities. Given these limitations, the three sites being evaluated for Space Launch Complex 7 represent the areas where the new complex could feasibly be constructed, while meeting safety criteria.

In addition to the alternative sites on Vandenberg for Space Launch Complex 7, the EIS will evaluate other existing government installations which could support Titan Centaur launches into polar orbit and other areas where polar launches could be supported.

The proposed construction and operation of Space Launch Complex 7 require the consideration of a range of environmental issues which reflect the nature of the proposed project and the characteristics of the local and regional setting. These include:

- geology and soils
- ground and surface water
- plant and animal life both on and off base
- noise
- air quality
- hazardous materials
- cultural and historic resources
- land use
- socioeconomics
- visual
- and transportation

In addition to the preparation of the EIS, the Air Force will begin the process of obtaining the necessary environmental permits and approval through various federal, state and local agencies. These include:

- air quality permits
- water quality permits
- compliance with the National Historic Preservation Act
- Compliance with the Endangered Species Act
- a federal coastal consistency determination
- as well as others.

As I mentioned earlier, we will be releasing a Draft EIS in the fall of 1988 for your review and comment, which will incorporate the environmental issues raised during this scoping process. Comments received on the Draft EIS will be incorporated into a Final EIS which will be released in the spring of 1989.

That concludes my statement.

Before we begin calling those individuals who have indicated a desire to address this meeting, I would like to open the floor to any clarification questions you may have on the proposed project as I have just described, the EIS process in general, or the purpose of this meeting. This would also be a good opportunity for those of you who wish to speak but have not yet handed in the speaker sign-up card to give them to one of the military members. Are there any questions?

(wait to see if there are any questions)

If there are no further questions, I would like to thank you for your attendance and cooperation, and call the first speaker.

(after meeting)
That is the last request to speak that we have. Does any one else wish to address this meeting? (pause)

Since there are no other speakers, I would like to thank you for your attendance and cooperation this evening, and for your inputs into the EIS process for Space Launch Complex 7. Thank you and good night.

TRANSCRIPTS OF PUBLIC SCOPING MEETINGS

Copies of the transcripts of the May 3, 1988, and May 5, 1988, Public Scoping Meetings for the proposed Titan IV/Centaur Space Launch Complex project are available upon request from:

Mr. Robert Mason
Chief, Planning Division
Department of the Air Force
Headquarters Space Division
Post Office Box 92960
Los Angeles, California 90009-2960

A.6 COMMENT LETTERS REGARDING ISSUES TO BE ADDRESSED IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED SLC-7 PROJECT, VANDENBERG AIR FORCE BASE

SCOPING COMMENTS SUMMARY
SLC-7 DRAFT EIS

Pursuant to the National Environmental Policy Act and regulations promulgated by the Council on Environmental Quality and U.S. Air Force Regulation 19-2, the Environmental Impact Analysis Process solicits comments on issues to be addressed in the Environmental Impact Statement (EIS) from the public, interest groups, public officials, and government agencies. As a part of this "Scoping" process, USAF solicited and received written comments on the proposed content of the SLC-7 EIS. The issues raised in the letters received by USAF and the location where the issue is addressed in the EIS are summarized below. Copies of the letters received follow this summary, as noted.

Letter No. 1, Page A-59
Correspondent: National Park Service - William H. Ehorn, Superintendent

Issues (Where Addressed in DEIS):

1. Sonic boom effects on Channel Islands caliche and wildlife (Section 4.4.1.3).
2. Toxic fumes effects on Channel Islands plants and wildlife (Sections 4.3.2.1, 4.4.2.1, and 4.5.2.1).

Letter No. 2, Page A-60
Correspondent: U.S. Fish and Wildlife Service - Nancy M. Kaufman, Field Supervisor

Issues (Where Addressed in DEIS):

1. Detailed habitat description (Section 3.3).
2. Wildlife/habitat description (Section 3.4).
3. Species lists (Section 3.4, Appendices B.4 and B.5).
4. Biological impact assessment (Section 4.4).
5. Operational impacts (Section 4.4).
6. Wildlife, habitat mitigations (Sections 4.3.4 and 4.4.4).
7. Erosion control (Sections 4.2.4.1 and 4.3.4.1).
8. Description of proposed action and alternatives (Sections 2.1 and 2.2).
9. Wetlands (Section 4.3).
10. Open space (Sections 3.3 and 4.3).
11. Cumulative effects to fish and wildlife (Section 4.4.2).

Letter No. 3, Page A-63
Correspondent: U.S. Environmental Protection Agency - Jacqueline Wyland, Chief, Office of Federal Activities

Issues (Where Addressed in DEIS):

WATER QUALITY

1. Compliance with water quality managements plans and standards (Section 1.5.5).
2. Coordination with RWQCB (Sections 1.5.5 and 4.6.2.1).
3. Coordination with State Water Resources Control Board (Coordination with the State Water Resources Board is effectively achieved through coordination with the Regional Water Quality Control Board.)

GROUND WATER

1. Description of existing conditions, assessment of impacts (Sections 3.2 and 4.2).
2. Mitigation measures (Sections 4.1.4 and 4.2.4; Table 4.1.3).

AIR QUALITY

1. Existing conditions, standards (Sections 1.5.4, 3.5.1.2, and 3.5.1.3).
2. Assessment of impacts (Section 4.5).
3. Mitigation measures (Section 4.5.4) (The USAF is solely responsible for implementation of mitigation measures.)
4. Coordination with SBCAPCD (Section 1.5.4).

HAZARDOUS WASTE

1. Potential for interference with CERCLA/SARA (Sections 1.5.5.7 and 3.6.3.3).
2. Compliance with CERCLA/SARA (Section 1.5.5.7).

HAZARDOUS MATERIALS - RCRA

1. Applicability of RCRA (Sections 1.5.5.6, 3.6, and 4.6).
2. Generation of hazardous waste (Sections 4.6.1.3, 4.6.2.3, and 4.6.3.3).
3. Compliance with RCRA (Section 4.6).
4. Notification procedures (Section 3.6.1).

Letter No. 4, Page A-67
Correspondent: California RWQCB - William R. Leonard, Executive Officer

Issues (Where Addressed in DEIS):

1. Map of surface waters and water wells (Figure 3.2.2).
2. Description of wastes, wastewater (Sections 2.1.3.3 and 3.6).
3. Waste treatment, disposal (Sections 2.1.3.3, 4.2.2, and 4.6).
4. Water quality impacts of disposal (Sections 4.6.1.2 and 4.6.2.2).
5. Water quality impacts from launch exhaust ground cloud (Section 4.4.2.1).
6. Mitigation measures (Sections 2.1.3.3, 4.2.4, 4.5.4, and 4.6.4).
7. Erosion control (Section 4.1.4).
8. Impacts of water use (Sections 4.2.2 and 4.2.3).

Letter No. 5, Page A-69
Correspondent: Department of Parks and Recreation - Russell G. Guiney, District Superintendent

Issues (Where Addressed in DEIS):

1. Effects to La Purisima Mission from noise and vibration (Sections 4.7.1 and 4.9.1.1).
2. Air quality impacts to La Purisima Mission (Sections 4.5, 4.9.1.1, and 4.11).
3. Hazardous materials and propellant transport (Section 4.11).
4. Public notification of VAFB emergencies, unusual events (Section 3.11.1).

Letter No. 6, Page A-71
Correspondent: Santa Barbara APCD - Deborah S. Pontifex, Interagency Liaison

Issues (Where Addressed in DEIS):

1. Emissions (Section 4.5).

1a. Emissions of each project phase (Section 4.5).

1b. Quantity of emissions, by source (Tables 4.5.1, 4.5.3, and 4.5.4).

1c. Emission impacts (Section 4.5).

1d. Emissions of toxic air pollutants (Section 4.5).

2. Offsets (Section 1.5.4.3).

3. Status of criteria pollutants (Section 4.5).

4. Emergency response planning (See below).

4a. Storage and handling of hazardous/toxic materials (Sections 2.1.3.5 and 3.11).

4b. Emergency response procedures (Section 3.11).

4c. Mitigation measures (Sections 4.5.4 and 4.11.4).

4d. Fuel transport (Section 3.11.2.1; Figure 3.11.1).

4e. Safety procedures for offshore platforms (Section 3.11).

5. Cumulative impacts (Sections 4.5.1 and 4.5.3; Table 4.5.5).

6. Offsite impacts (Section 4.0).

7. Need for project (Section 1.3).

Letter No. 7, Page A-74
Correspondent: County of Santa Barbara Resource Management Department - Jeffrey T. Harris, Deputy Director

Issues (Where Addressed in DEIS):

1. Air quality impacts (Section 4.5).

2. Ground water impacts (Section 4.2).

3. Biology impacts (Sections 4.3 and 4.4).

4. Growth induction (Section 4.12).

5. Hazardous/toxic wastes (Section 4.11).

6. Launch-related accidents (Section 3.11).

7. Noise (Sections 4.4 and 4.7).

8. Cultural resources impacts (Section 4.9).

Letter No. 8, Page A-76
Correspondent: County of Santa Barbara, Office of Disaster Preparedness - Susan Strachan, Hazardous Materials Coordinator

Issues (Where Addressed in DEIS):

1. Potential emergencies (Sections 3.11 and 4.11; Risk Assessment).

2. Propellant transport (Sections 3.11 and 4.11.1.2).

3. Feasibility of propellant manufacturing facility at VAFB (The potential for building and operating a rocket propellant manufacturing facility on VAFB was not addressed in the EIS as an alternative to the truck transport of propellant to VAFB from a remote location. The costs of building a propellant manufacturing facility would be high. Further, the risk to public health and safety from operation of such a facility would be greater than that associated with intermittent truck transport. There would be greater quantities of material and more potential accident initiators associated with a manufacturing facility than with truck transport of the quantities necessary to satisfy the requirements of the VAFB space program.)

4. Safety of Jalama Beach (Section 4.5).

5. Hazards to future off-base land use (Section 4.13).

Letter No. 9, Page A-78
Correspondent: City of Lompoc - Jeremy Graves, Associate Planner

Issues (Where Addressed in DEIS):

1. Employment, population, housing (Sections 3.12 and 4.12).

2. Traffic impacts (Section 4.10).

3. Impacts to public finance, infrastructure (Section 4.12).

4. Recreation facilities impacts (Sections 4.13.2.1 and 4.14).

5. Noise (Section 4.10).

6. Emergency response capabilities (Section 3.11).

7. Cumulative impacts/other projects (Section 4.12.3).

Letter No. 10, Page A-80
Correspondent: Bixby Ranch Company - Kenneth C. Bornholdt

Issues (Where Addressed in DEIS):

1. Project description and alternatives (Sections 2.1, 2.2, 2.3, 2.4, and 2.5).

2. Emergency response plan (Section 3.11).

3. Missile tracks (Section 3.11.2.2).

4. Existing environmental setting (Section 3.0).

5a. Noise, sonic booms (Sections 4.4.1, 4.11.1, and 4.11.2; Figures 4.4.1 and 4.7.1).

5b. Release of toxic fumes, hazardous materials (Sections 4.5 and 4.11).

5c. Debris (Section 4.11).

5d. Detonation noise (Sections 4.5 and 4.11).

5e. Fire (Section 4.3).

5f. Ground water impacts (Section 4.2).

6a. Risk assessment (Section 4.11).

6b. Safety measures (Sections 2.1.3.5 and 3.11).

6c. Safety regulations and plans verification (Section 4.11).

6d. Compliance with safety regulations and plans (Sections 2.1.3.5 and 3.11).

6e. Validity of isopleth predictions (Section 3.11.2.2; Figure 3.11.2).

7. Health and safety regulations (Section 3.11).

8. Future growth (The document addresses the proposed development and potential future use of the SLC-7 facility. Socioeconomic growth associated with the additional personnel required for construction and operations is addressed in Section 4.12. Potential hazards and risks are evaluated in Section 4.11 and in the Risk Assessment. Other uses of SLC-7 are not known at this time. If proposed, they would be addressed in a separate environmental document.)

9. VAFB launches through the Year 2000 (Sections 4.11.3; Table 4.13.1) (The EIS contains as full a discussion as appropriate for a document of public circulation. Known launches through the year 1995 are addressed. Details of launch schedules beyond 1995 either are not known or are not available at this time. Detailed analyses of risks from the proposed Titan IV/Centaur launches are contained in the Risk Assessment, which is available.)

10a. Safety of quantity-distance criteria (Section 2.1.3.5; Figure 2.1.2).

10b. Safety verification of quantity-distance criteria (Section 2.1.3.5).

11a. Quantity of liquid propellant storage (Section 2.1.3.3).

11b. Safety of liquid propellant storage (Section 4.11).

12. Health and safety (Sections 3.11 and 4.11).

13. Impacts to present and potential land use outside of VAFB (Sections 4.11 and 4.13).

14. Transportation and evacuation (Sections 2.1.3.5, 4.10, and 4.11).

15. Mitigation measures (Sections 2.4 and 4.0).

16. Vehicle in-flight abort (Section 4.11).

17. Launch range hazard zones (Sections 2.1.3.5, 4.11, and 4.13.1).

18. Hazard footprints (Sections 2.1.3.5 and 3.11.2.2; Figures 3.11.2, 4.4.1, 4.4.2, and 4.7.1).

19. Prior vehicle safety records (The EIS discusses safety related to vehicle processing and launch to the extent it is pertinent to discussion and analysis of the proposed action and alternatives. Massive records, including safety, are compiled by the USAF and utilized for modification and development of virtually every aspect of its space program. As such, these types of information were utilized in development of the Titan IV/Centaur vehicle addressed for this project. Further discussion of the relatively limited information which is available to the public would, therefore, be redundant and of little use. A detailed Risk Assessment is available as a separate document. The Risk Assessment presents a detailed discussion of risks and safety issues as they relate to the normal and unscheduled events associated with various Titan IV space vehicle processing and launch scenarios.)

20. Comparative analysis of previous EISs for VAFB missile launch operations (Previously prepared EISs and other formally prepared environmental reports and documentation were thoroughly reviewed prior to preparation of the SLC-7 EIS. In such manner, this document incorporates the most recent information available in regard to missile launches. A review of the adequacy of past environmental documentation would serve no useful purpose, adding neither accuracy nor completeness to this EIS.)

21. Toxic hazard corridor (launch isopleth) (Sections 2.1.3.5, 3.11, 4.5, 4.11, and 4.13.1).

Letter No. 11, Page A-86
Correspondent: Hollister Ranch Owners Association - Alvin J. Remmenga, Ranch Manager

Issues (Where Addressed in DEIS):

1. Impacts to lands south of VAFB (Sections 3.11.1, 4.11, 4.13, and 4.14).

2. Impacts to offshore platforms and pipelines (Sections 4.5 and 4.11).

Letter No. 12, Page A-88
Correspondent: Michael E. Kelley - Lompoc, California

Issues (Where Addressed in DEIS):

1. Utilization of SLC-6 for Titan IV/Centaur program (Section 2.2.3).

Letter No. 13, Page A-90
Correspondent: Aubrey B. Sloan - Santa Maria, California

Issues (Where Addressed in DEIS):

1. Socioeconomic analysis (Sections 3.12 and 4.12) (General Dynamics has been awarded the contract to design the Centaur stage of the Titan IV, as addressed in this document.)

2. Use of previous Space Shuttle studies (Section 8.0).

3. Propellant transport routing (Table 3.11.1).

Letter No. 14, Page A-91
Correspondent: Mark Hopson - Lompoc, California

Issues (Where Addressed in DEIS):

1. Potential closure of Jalama Beach County Park (Section 4.14; Table 4.13.1).
2. Launch-related closure of Jalama Beach County Park (Section 4.14; Table 4.13.1).
3. Emergency evacuation of Jalama Beach County Park (Section 3.11.1).

United States Department of the Interior

NATIONAL PARK SERVICE
CHANNEL ISLANDS NATIONAL PARK
1901 SPINNAKER DRIVE
VENTURA, CALIFORNIA 93001

IN REPLY REFER TO:
L7617

May 3, 1988

Mr. Robert Mason
HQ Space Division/DEV
P.O. Box 92960
Los Angeles, CA 90009

Dear Mr. Mason:

Thank you for informing our office about the public meetings to determine the scope of environmental issues to be addressed in the preparation of an Environmental Impact Statement (EIS) for the proposed construction and operation of a new space launch complex at Vandenberg Air Force Base, California. A member of my staff will attend one of the scheduled public meetings on May 3 and 5.

According to Sec. 201 of P.L. 96-199, Channel Islands National Park (CHIS) was established by the U.S. Congress:

> "...In order to protect the nationally significant natural, scenic, wildlife,, marine, ecological...and scientific values of the Channel Islands..., including, but not limited to, the following:
>
> ....
> (3) the pinnipeds which breed and pup almost exclusively on the Channel Islands.
>
> (4) the Eolian landforms and caliche;..."

Because of the legislative mandate to protect nationally significant resources in Channel Islands National Park, we urge that the following issues be addressed in the EIS.

(1) Effects of sonic booms on the caliche and wildlife (especially pinnipeds) in CHIS.

(2) Effects of any toxic fumes created by normal launches and accidents on air quality, and eventually, on the native plant and animal life of CHIS.

Sincerely,

Thomas H Ugolini, for

William H. Ehorn
Superintendent

LETTER 2

United States Department of the Interior

FISH AND WILDLIFE SERVICE
LAGUNA NIGUEL FIELD OFFICE
24000 Avila Road
Laguna Niguel, California 92656

May 19, 1988

Department of the Air Force
Headquarters Space Division (AFSC)
Los Angeles Air Force Station
P. O. Box 92960
Los Angeles, California 90009-2960

Attn: Robert Mason

Subject: Environmental Impact Statement Titan Centaur Space Launch Vehicle, Vandenberg Air Force Base, Santa Barbara, California

As requested by your letter dated April 15, 1988, and received by our office on April 29, 1988, the U.S. Fish and Wildlife Service (Service) is providing the following comments on the proposed construction and operation of a new space launch complex for the Titan Centaur space launch vehicle at Vandenberg Air Force Base, California.

The proposed project consists of the construction and operation of a Space Launch Complex which includes a Titan Centaur space launch vehicle, an umbilical tower, mobile service tower, launch platform, and other operational support structures and facilities for propellant storage, utilities and communications. The purpose of the project is to provide a launch facility for unmanned space vehicles with Department of Defense payloads which can be launched into polar orbit. These potential project sites, located on south Vandenberg Air Force, are being evaluated. The Service offers the following comments and recommendations.

The primary concern of the Service is the protection of public fish and wildlife resources and their habitats. Our mandates require that we provide comments on any public notice issued for a Federal permit or license affecting the nation's waters, in particular, Corps of Engineers (Corps) permits pursuant to Section 404 of the Clean Water Act and Section 10 of the river and Harbor Act of 1988. Section 7 of the Endangered Species Act of 1973, as amended, requires Federal agencies to consult with the Service should they determine that their actions will affect any listed endangered or threatened species. Section 9 of the Act prohibits the "taking" of any Federally listed endangered or threatened species. Taking includes harm which may include destruction of necessary habitat or disruption of nesting behavior.

To adequately evaluate the proposed project, the draft Report should contain the following information:

1. Specific acreages and detailed descriptions of the amount and types of habitats which may be affected by the proposed project. Maps and tables should be included in the draft Report to assist in evaluation of project-related impacts.

2. Quantitative and qualitative information concerning fish and wildlife resources associated with each habitat type.

3. A list of Federal candidate, proposed or listed threatened species, State-listed species, and locally declining or sensitive species that are found in the project site. A detailed discussion of these species, focusing on their site-related distribution and abundance and the anticipated impacts of the project on these species should also be included.

4. An assessment of biological impacts including cumulative impacts. All aspects of the project including indirect impacts should be included in this assessment.

5. An analysis of potential long-term impacts of the operation and maintenance of the facility.

6. Specific mitigation plans to offset project-related impacts, including cumulative impacts of direct and indirect habitat losses. If necessary, adverse project-related impacts should be mitigated through revegetation of the impacted habitat type. The objective of the mitigation plan should be to offset the project induced loss of wildlife habitat values. Plans to mitigate through revegetation should be prepared and should include a discussion of how this objective will be achieved by this plan. Mitigation plan information should include: a) a detailed map noting the locations of areas to be revegetated; b) criteria used to establish minimum survival rates for all plant species used; c) a monitoring program to determine the success of the revegetation effort; d) the number and size of plant species used; and e) planting methods, the time of year the planting will be conducted and the type of irrigation that will be implemented.

7. Identification of construction precautions that will prevent soil erosion, along with specific erosion and sedimentation control plans to be carried out throughout the life of the project.

8. A description of the proposed project, including all feasible alternatives that reduce project impacts to biological resources.

9. A discussion of impacts to any wetland habitat on-site and downstream of the proposed project. This section should include a map showing the location of any wetland habitat that occurs on-site and any fills proposed within the wetland.

10. A discussion concerning proposed open space and the continuation of that open space to existing and/or proposed adjacent open space to provide maximum wildlife use of the project site.

11. A discussion of the cumulative effects of this project to fish and wildlife resources on Vandenberg Air Force Base. Given the number of projects currently operating and or proposed on the Base and the sensitive habitats which occur there, the Service recommends the [redacted] to protect sensitive areas from future disruptions.

We look forward to receiving the draft Report. Should you have any questions, please contact Ms. Donna Brewer at (714) 643-427[illegible].

Sincerely,

Nancy M. Kaufman

Nancy M. Kaufman
Field Supervisor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

21 JUN 1988

Robert Mason
U.S. Air Force
Headquarters Space Division/DEV
P.O. Box 92960
Los Angeles, CA 90009-2960

Dear Mr. Mason:

The Environmental Protection Agency (EPA) has reviewed the Notice of Intent (NOI) and your April 15, 1988 "scoping" letter for the PROPOSED CONSTRUCTION AND OPERATION OF SPACE LAUNCH COMPLEX 7 (SLC-7) AT VANDENBERG AIR FORCE BASE, CALIFORNIA.

Our detailed comments on these documents are enclosed. The DEIS should discuss these issues, if applicable, for the various alternatives.

We appreciate the opportunity to comment on the proposed project. Please send five copies of the DEIS to this office at the same time it is officially filed with our Washington, D.C. office. Please notify us of any public hearings or inter-agency meetings to be held on this project. If you have any questions, please call David Tomsovic of my staff at 415-974-8177 (FTS 454-8177).

Sincerely,

Harriet Hill for

Jacqueline Wyland, Chief
Office of Federal Activities

Enclosure (3 pages)

cc: Paul Jagger, RWQCB, San Luis Obispo
Richard Baldwin, SBCAPCD, Santa Barbara
Bob Fletcher, California Air Resources Board, Sacrame

21 JUN 1988

EPA COMMENTS ON THE NOI AND SCOPING LETTER FOR THE PROPOSED CONSTRUCTION AND OPERATION OF SPACE LAUNCH COMPLEX 7 (SLC-7), VANDENBERG AIR FORCE BASE, SANTA BARBARA COUNTY, CALIFORNIA.

WATER QUALITY COMMENTS - CLEAN WATER ACT

For each alternative, the DEIS should do the following.

1. Discuss how the project will comply with State and local water quality management plans and State-adopted, EPA-approved water quality standards.

Common beneficial uses of surface waters in the central coastal region include municipal and domestic supply, agricultural supply, and ground water recharge. In addition, all minor streams and tributaries in the central coastal region, including Honda Creek and Jalama Creek, have two beneficial use designations (recreation and aquatic life) that must be protected.

2. Coordinate water quality planning, compliance with standards, and mitigation measures with the Regional Water Quality Control Board (RWQCB), Central Coast Region in San Luis Obispo. This will ensure that water quality and beneficial uses are protected.

3. Coordinate with the State Water Resources Control Board (SWRCB) in Sacramento to ensure that project activities are consistent with California's new non-point source water management program.

In 1987, the Clean Water Act was amended by adding Section 319. Section 319 requires States to assess non-point source water pollution problems, develop non-point source pollution management programs, and implement controls to improve water quality.

Controls should be implemented for any project activities (e.g., construction, operations) that could result in non-point source water pollution problems. Once final rules are developed by the SWRCB, it may be necessary for the Air Force to also coordinate its non-point source planning activities with the RWQCB.

GROUND WATER COMMENTS

For each alternative, the DEIS should do the following.

1. Describe current ground water conditions in the project area. Assess any likely impacts on ground water quantity and quality from SLC-7 activities (construction, operations, fuel and fuel waste tanks, incinerator, waste storage).

2. Identify mitigation measures to prevent or reduce adverse impacts to ground water quality, and discuss their effectiveness.

AIR QUALITY COMMENTS - CLEAN AIR ACT

For each alternative, the DEIS should do the following.

1. Describe existing air quality conditions in terms of National Ambient Air Quality Standards (NAAQS), Federal Prevention of Significant Deterioration (PSD) increments, and State standards.

2. Identify how project activities could adversely affect air quality in terms of ambient concentrations and the numbers of Federal/State standards and increment violations. Project activities that could affect air quality include construction (dust, gaseous pollutants), test burns, fuel loading, and the incineration of rocket propulsion fumes.

3. Discuss the types and effectiveness of mitigation measures that will be used to protect air quality (e.g., vapor recovery systems, fumes incinerator, and dust control measures during construction). Identify any parties other than the Air Force that will be responsible for implementing the mitigation measures.

4. Coordinate with the Santa Barbara County Air Pollution Control District on air quality planning, compliance, and mitigation.

HAZARDOUS WASTE/HAZARDOUS SUBSTANCES COMMENTS - "SUPERFUND"

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), established requirements and procedures for dealing with hazardous substances. This law is more commonly known as "Superfund." These requirements and procedures apply to facilities owned or operated by the U.S. Government (CERCLA Section 120). Executive Order 12580 ("Superfund Implementation, signed by President Reagan on January 23, 1987) established provisions detailing how departments of the Executive Branch will comply with the requirements of CERCLA/SARA.

For each alternative, the DEIS should do the following.

1. Ensure that no SLC-7 development will interfere with or delay Remedial Investigation/Feasibility Studies (RI/FS) or cleanup activities in accordance with the Air Force's responsibilities under CERCLA/SARA.

2. Demonstrate that no construction will take place where hazardous substances have been deposited or toxic spills have occurred until the requirements of CERCLA/SARA have been satisfied. The selection or construction of a launch site may be restricted by the findings of the Installation Restoration Phase I report if hazardous substances or spill sites are identified. The RI/FS Remedial Design/Remedial Action activities would take priority over new construction at any contaminated sites until CERCLA/SARA compliance has been achieved.

HAZARDOUS MATERIALS COMMENTS - RESOURCE CONSERVATION AND RECOVERY ACT

For each alternative, the DEIS should do the following.

1. Discuss the applicability of the Resource Conservation and Recovery Act (RCRA), RCRA regulations, and State/county laws and regulations governing the generation, storage, transportation, treatment and disposal of hazardous wastes.

2. Determine if the the project will generate any hazardous wastes (as defined in 40 CFR 261). RCRA regulations are detailed in 40 CFR 124, 260-268, and 270-271. Discuss means of complying with RCRA requirements and State/county hazardous waste requirements.

3. Discuss how the project will meet RCRA permit requirements. New facilities that treat, store or dispose of hazardous waste must obtain a RCRA permit prior to construction. We understand that certain features of the SLC-7 project (fuel and other waste tanks, scrubber, perhaps the incinerator) will require a modification of the current Vandenberg Part B RCRA permit.

4. State that if hazardous materials (including petroleum products) are accidentally released into environment, the responsible party will *immediately* notify the National Response Center at 800-424-8802. The notification should provide details of the incident and any responsive actions taken. Local Coast Guard or EPA offices may be notified in lieu of the National Response Center.

STATE OF CALIFORNIA GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
CENTRAL COAST REGION
1102 A LAUREL LANE
SAN LUIS OBISPO, CALIFORNIA 93401
(805) 549-3147

May 23, 1988

Mr. Robert Mason
HQ Space Division/DEV
P. O. Box 92960
Los Angeles, CA 90009-2960

Dear Mr. Mason:

SUBJECT: VANDENBERG AIR FORCE BASE
PROPOSED SPACE LAUNCH COMPLEX 7

We received a notice of preparation of a draft Environmental Impact Statement (EIS) for the subject project. You requested the views of this agency as to the scope and content of the EIS relative to our regulatory responsibilities.

Our major regulatory responsibilities include discharges to land or surface waters which may affect ground or surface water quality. We request that the EIS contain the following information:

1. Map showing all surface waters and water wells in the vicinity of the proposed project.

2. Detailed description of all wastes/waste waters, (i.e., domestic waste water, deluge waters, washdown waters, contaminated storm waters, hazardous waste, etc.) including their estimated quantities.

3. Detailed description of methods for treatment, storage, and disposal of all wastes/waste waters, including times, quantities, location(s) of discharge, and containment structures to prevent waste streams from entering surface waters.

4. Detailed description of potential water quality impacts resulting from disposal operations.

5. Potential impacts to water quality from launch exhaust ground clouds.

6. Measures to mitigate potential impacts identified above, including plans for preventing adverse impacts from accidental discharges (i.e., spills).

7. Specific practices to be followed to minimize erosion resulting from land disturbance activities.

8. Water supply and water quality impacts of increasing overdraft in ground water basins, including proposed mitigation measures.

We appreciate the opportunity to comment on the preparation of this report. If you have any questions regarding our comments, please call Bill Meece or Jay Cano at this office.

Very truly yours,

William R. Leonard

WILLIAM R. LEONARD
Executive Officer

mason.ltr/13

WJM/se

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF PARKS AND RECREATION

La Purisima Mission SHP
2295 Purisima Road
Lompoc, Ca. 93436
May 5, 1988

Mr. Robert Mason
HQ Space Division/DEV
P.O. Box 92960
Los Angeles, Ca. 90009-2960

Dear Mr. Mason:

RE: Environmental Impact Statement (EIS) for proposed construction and operation of a new Space Launch Complex for the Titan Centaur Space Launch Vehicle at Vandenberg Air Force Base, California.

The La Purisima Mission District of the California Department of Parks and Recreation has statutory responsibility for protecting the cultural and natural resources of La Purisima Mission State Historic Park and Point Sal State Beach.

The above project will directly impact La Purisima Mission State Historic Park located 3 miles northeast of Lompoc at 2295 Purisima Road. The following areas are of major concern to us:

1. Noise and vibration: The park has nine major historic adobe structures. Portions are original dating from 1813. Much is reconstruction done by the Civilian Conservation Corp in the 1930's. This is California's most completely restored mission in its most original setting. It is a National Registered Historic Landmark. Any vibrations, shock waves or sonic booms that would impact the historic buildings are of concern to us. Noise is also a concern. Over 120,000 people visit this park each year. Modern noise intrusion has a direct impact on our ability to interpret this mission in its historic setting.

2. Air quality: In 1986 a Titan Rocket blew up just after lift-off from Vandenberg. The possibility of a toxic gas cloud passing over the park was of very great concern to our staff and visitors. Other impacts to air quality can affect natural organic materials used in historic building construction such as leather binding material. Visitors, staff, domestic park animals, wildlife, domestic crops, gardens, natural plant communities and historic structures will all be affected by air quality.

3. Hazardous materials and propellant transport: Present rocket fuel shipments to Vandenberg pass directly by the parks main gate. A portion of our 120,000 annual visitors are school children on organized field trips. Many school and tour busses enter and exit our main gate.

4. Notification of public agencies during emergencies or unusual events on base: The Titan explosion in 1986 caused near hysteria among some of our visitors. Special concern was expressed by school group leaders. At the time our staff was not able to get any information from the base to reduce public fear. At any one time park staff could be responsible for the safety and orderly evacuation of several hundred and occasionally several thousand people. A majority of these could be school children.

Thank you for the opportunity to comment on the scope and content of the EIS relative to our agency's statutory responsibilities.

Sincerely,

Russell G. Guiney
District Superintendent

cc: Mr. Felty, Central Coast Region
Mr. Preece, Gaviota District

County of Santa Barbara
AIR POLLUTION CONTROL DISTRICT

5540 EKWILL, SUITE B, SANTA BARBARA, CALIFORNIA 93111
PHONE: (805) 964-8111 FAX (805) 967-4872

JAMES M. RYERSON
Air Pollution Control Officer

WILLIAM A. MASTER
Assistant Director

May 17, 1988

Department of the Air Force
HQ Space Division/DEV
PO Box 92960
Los Angeles, CA 90009-2960

ATTENTION: Mr. Robert Mason

REGARDING: Scoping Comments on the EIS for Titan Centaur SLC-7

Dear Mr. Mason:

The District is pleased to respond to your request for comments on the scope of the EIS for the construction and operation of the space launch complex 7 (SLC-7) for the Titan Centaur space launch vehicle. Our comments on the proposed project are presented below.

1. Emissions.

   A. The EIS should discuss emissions separately for each of the three phases of the project: construction, "activation", and operations, as defined in the project description.

   B. The EIS should quantify all emissions associated with each phase of the project by specific emission source.

   C. Emissions should be presented for both peak-hour and for short-term average conditions. Emission impacts should be modeled and compared with the national, state and District ambient air quality standards and allowable air quality increments.

   D. Emissions of toxic air pollutants, as identified by the Air Resources Board and the Environmental Protection Agency, should be clearly identified and quantified. Some of these toxic compounds may require a risk assessment.

2. Offsets.

   Proposed sources of emission offsets, and the corresponding level of emission reduction as required by District Rules and Regulations, should be clearly identified in the EIS.

3. Status of Criteria Pollutants.

The EIS should present the air quality analysis for the proposed project in the context of the following pollutants being regulated under New Source Review by District rules: ozone, PM_{10} (particulate matter with aerodynamic diameter less than or equal to 10 microns), and their precursors.

4. Emergency Response Planning Associated With Hazardous and Toxic Materials.

A. The storage and handling procedures for all hazardous and toxic materials associated with the project should be discussed in detail, particularly in light of the recent (5/4/88) explosion of a space shuttle fuel plant in Henderson, Nevada.

B. Emergency response procedures in the event of an accident on the ground or immediately after liftoff of the Titan Centaur should also be discussed in detail. (VAFB has experienced an explosion of its Titan series rocket on at least one occasion in the recent past.)

(C) The EIS should propose appropriate mitigation measures for items (A) and (B), where necessary to protect the health and welfare of the residents of Santa Barbara County and adjoining areas.

Additional safety-related concerns to be addressed in the EIS include:

(D) o The proposed route to VAFB for transporting fuels for the Titan Centaur, and safety procedures associated with this transport; and

(E) o Safety procedures to protect personnel aboard offshore platforms in the Titan Centaur's flight path, as well as contingency plans should an accident occur in flight.

5. Cumulative Impacts.

The EIS should address the cumulative air quality impact of launches from SLC-7 in combination with launches from other existing launch facilities at VAFB. The expected number of launches per year at VAFB should be characterized in terms of both the launch location and type of space launch vehicle.

6. Offsite Impacts.

Potential impacts associated with the project that may occur outside VAFB's borders (e.g., transportation of the fuel for the Titan Centaur) should be discussed with respect to location and magnitude of impact.

7. Need for the Project.

The need for a new space launch complex at VAFB at this time should be discussed in light of a potential Congressional decision to put existing space launch facilities at VAFB in "caretaker" status.

The District appreciates this opportunity to comment on the scope of the EIS. We would like to continue to be involved at regular and frequent intervals during preparation of the EIS. We can offer the Air Force significant personnel expertise on air quality issues specific to this project which would improve the quality of the environmental analysis. To this end, we would like to develop a funding mechanism with VAFB to ensure our continued participation.

Sincerely,

Deborah S. Pontifex

Deborah S. Pontifex
Interagency Liaison

JMR/kj
4429C

cc: Jeffrey Harris, RMD
Susan Strachan, County Office of Disaster Preparedness
VAFB SLC-7 File
Responsible Agency Review File
MSED Chron File

LETTER 7

County of Santa Barbara

RESOURCE MANAGEMENT DEPARTMENT

Dianne Guzman, AICP, Director

May 13, 1988

Mr. Robert Mason
HQ Space Division/DEV
PO Box 92960
Los Angeles, CA 90009-2960

RE: EIS Space Launch Complex, Vandenberg AFB

Dear Mr. Mason:

This letter is in response to the first phase of the Environmental Impact Analysis Process concerning the proposed construction and operation of a new space launch facility for the Titan Centaur space launch vehicle at Vandenberg Air Force Base in Santa Barbara County, California.

Our position on the issues to be addressed in the Draft EIS is as follows:

1. o Air Quality - this issue area needs to be discussed in terms of air quality impacts during construction as well as operational aspects of launch activities.

2. o Groundwater - should be addressed as it relates to total available storage of the affected groundwater basin, consumptive use during construction and operation of the complex during launch activities, the relationship of the project specific as well as cumulative groundwater extractions to the County's threshold of significance for groundwater impacts, the status of the currently overdrafted groundwater basin, any mitigation measures to reduce impacts, and water quality and biology impacts caused by groundwater extractions.

3. o Biology - discuss impacts to biological resources during construction and operational phases of the launch facility.

4. o Growth Induction - this issue area should describe any growth induction in surrounding communities from the project to include both primary and secondary effects, i.e. new employment, secondary employment in regard to ancillary support services, direct and indirect housing impacts and infrastructure demands.

5. o Hazardous and Toxic Wastes - discuss both the generation and disposal of hazardous and toxic waste during construction as well as launch activities.

6. o Risk of Upset - discuss proposed contingency measures to address any accidents during launch activities such as explosions or launch vehicle crashes to protect the public's health and safety.

123 E. Anapamu Street, Santa Barbara, CA 93101
PHONE (805) 568-2000 FAX (805) 568-2522

7. o Noise - the EIR should investigate noise impacts during launch and its affect on surrounding residents and biological resources.

8. o Cultural Resources - discuss impacts to cultural resources during construction to include archaeology, Native American religious sites and historic resources.

Thank you for the opportunity to comment and if you have any questions, please call me at (805) 568-2008.

Sincerely,

Jeffrey T. Harris, Deputy Director
Division of Environmental Review

JTH:jmb:4751A
cc: Amy Margerum, RMD
Doug Anthony, RMD
Susan Strachan, Emergency Services

LETTER 8

COUNTY OF SANTA BARBARA

105 East Anapamu Street
Santa Barbara, CA 93101
Telephone 568-3415

LEWIS S. REED
Director

BRUCE H. LEE
Deputy Director

OFFICE OF DISASTER PREPAREDNESS

May 16, 1988

Mr. Robert Mason
HQ Space Division
P.O. Box 92960
Los Angeles, CA 90009-2960

Dear Mr. Mason:

The Santa Barbara County Office of Disaster Preparedness would like to see the following issues addressed in the Environmental Impact Statement for the Department of the Air Force's Space Launch Complex 7 Project:

1. The Air Force has identified issues anticipated to be addressed in the EIS. Although hazardous materials and propellant transportation were included, system safety and emergency response were not. The EIS must contain a discussion and assessment of <u>all</u> the potential emergencies resulting from the project. This includes hazard footprints for each type of emergency, the areas and population affected, proposed mitigation measures such as additional safety systems and training for local emergency responders, and the emergency response efforts Vandenberg Air Force Base will use to mitigate emergencies both on the base and off.

2. How many truck trips of rocket propellants will be necessary for each launch? What is the number for the life of the project? Will there be an agreement with the California Highway Patrol to provide escort service for this increase in additional rocket propellant truck trips?

3. VAFB representatives have stated that it is not cost feasible to build a manufacturing facility for rocket propellants on VAFB. Since the development of the SLC 7 project will increase the amount of rocket propellant needed, thus increasing the number of truck trips carrying propellants, the feasibility of building such a facility should be considered.

4. Although Jalama County Beach will be closed to public access during launches, what measures will be taken to protect park

employees living at Jalama Beach in the event a Titan explosion?

5. The compatability of the hazard footprint with future land use considerations off base, must be assessed.

Thank you for your time and consideration. Should you have any questions regarding these comments, please do not hesitate to call me at (805)568-3416.

Sincerely,

Susan Strachan
Hazardous Materials Coordinator

CITY OF LOMPOC
VALLEY OF FLOWERS

May 16, 1988

Mr. Robert Mason
HQ Space Division/DEV
P.O. Box 92960
Los Angeles, CA 90009-2960

Re: Comments Upon Proposed EIS for SLC-7

Dear Mr. Mason:

We have reviewed the condensed project description for the Titan Centaur Space Launch Complex (SLC-7) proposed for Vandenberg Air Force Base (VAFB). We request that the following subjects be addressed in the Environmental Impact Statement:

1. - Employment, population, and housing projections by Santa Barbara County Housing Market Area (e.g., Lompoc Valley, Santa Maria/Orcutt, South Coast).

2. - Projection and analysis of traffic impacts at key intersections within the Lompoc Valley (e.g., Highway 1/Highway 246, "H" Street/Central Avenue, "H" Street/Ocean Avenue, Ocean Avenue (formerly Highway 246)/South Gate VAFB).

3. - Analysis of impacts upon public finance and infrastructure capabilities.

4. - Analysis of impacts upon public parks and recreational opportunities, including potential closures of Jalama Beach and Ocean Beach County Parks.

5. - Potential increases in VAFB aircraft traffic and resultant noise increases in the Lompoc Valley.

6. - Emergency response capabilities of Santa Barbara County, City of Lompoc, and VAFB safety personnel.

7. - Cumulative analysis of major proposed and approved projects in the area (e.g., federal OCS projects).

Please note that Caltrans and Santa Barbara County swapped Highway 1, Highway 246, and County Highway S-20 in March 1987. Your highway basemap may need corrections.

The City of Lompoc is in the process of updating its General Plan and has baseline data and projections that may be useful in the preparation of the Environmental Impact Statement. Please contact me if you desire further information regarding these comments or Lompoc's General Plan Update Program.

Sincerely,

Jeremy Graves
Associate Planner

cc: King Patrick Leonard, Planning Director
Michael Powers, Area Planning Council
Jonathan Dohm, County Parks and Recreation Department
Brian Bresolin, 1 STRAD/ETP

LETTER 10

BIXBY RANCH COMPANY
A California Limited Partnership

Fred H. Bixby, Founder • 1875-1952

Kenneth C. Bornholdt
Senior Vice President
& General Counsel

13 May 1988

HQ Space Division/DEV
Post Office Box 92960
Los Angeles,CA 90009-2960

Attention: Mr. Robert Mason

Re: U.S. Air Force Proposed Vandenberg Titan Centaur Space Launch Complex (SLC-7) Environmental Impact Statement (EIS) Scoping

The Bixby Ranch Company (Bixby), the owners and operators of the 26,000 AC Cojo - Jalama Ranch located South of and adjacent to Vandenberg Air Force Base (VAFB), is one of th property owners most affected by the proposed SLC-7 for the Titan Centaur. Our property is currently zoned to permit development of over 500 cluster residential units. We are currently in the final planning stage of this new development and will be applying for a permit in the near future to build it.

Bixby is greatly concerned about the incompatibility of this proposal (SLC-7) with the present and future use of our property and the surrounding area (i.e., Jalama Beach Park).

Accordingly, we have the following comments, which should be addressed in the EIS:

1. The project description should include all three proposed sites at VAFB, all existing launch facilities at VAFB and Cape Canaveral, Florida. Each of these sites should be fully analyzed separately under all the same criteria.

2. The project description should include any emergency response plan or disaster preparedness program proposed for the project to deal with the present and future use of the base and surrounding property over the projected life of SLC-7.

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3. The project description should describe in written and graphic form the projected missile tracks and margin of error in track alignment and the margin of error considering weather conditions for all proposed and alternative sites.

4. The EIS should contain a specific section which describes in detail the existing setting in which the proposed project will occur, including the following:

   (a) A description of all existing facilities and operations at VAFB. The EIS should contain a full discussion and analysis of all the present and future VAFB missile launch activities, number, type size and weight, reliability, date/time/duration, trajectory, launch weather and wind condition;

   (b) A description of the existing environment on the base;

   (c) A description of the present surrounding land uses and future land uses, including information on present and future resident population levels for the Bixby property and user figures for Jalama Beach Park;

   (d) A description of any disaster preparedness programs, fire protection plans, emergency response plans, notification plans, and coordination plans currently in place relating to the Bixby property.

5. The EIS should examine in depth the isopleths and their uncertainties surrounding all launch complexes and all hazardous material storage areas and transportation routes. These should be expressed by isograms for each of the following physical hazards:

   (a) Noise - from the rocket engines during ground tests and from launch to orbit insertion plus the sonic boom as noted in your May 3, 1988 handout.

      (1) The potential adverse impacts of intense sonic booms on property, humans and animals must be addressed. Information and supporting research documents must verify the estimated noise levels, frequency, rise time, and pressure level of the sonic booms from the propsed Titan Centaur and all existing operations at the base.

(b) Toxic fumes and hazardous materials release during transportation to VAFB, from storage areas on VAFB, at the launch pad, or at some destruct points along the trajectory of the missile as it progresses from launch to orbit to insertion.

(c) Debris generated by intentional or unintentional detonation of:

(1) fuel storage facilities;

(2) fuel transport vehicle; or

(3) missile detonation at points ranging from launch area to orbit insertion;

(d) Blast and shock wave amplitudes caused by intentional or unintentional detonation of the missile from launch to orbit insertion or from fuel storage areas or transport routes.

(e) brush and forest fires started from above hazards;

(f) ground water pollution.

6. With respect to the physical hazards mentioned above, the EIS should address the following:

(a) What are acceptable risk levels? How were those levels derived or developed? How do those risk levels compare to other similar hazardous operations (e.g., nuclear power facilities) in terms of impacts on surrounding property? What are the uncertainties with these risk levels?;

(b) the specific application of the Military Safety Program Plan and all applicable health and safety regulations to the proposed project and all alternative sites;

(c) the factual and test result verification of all such applicable safety regulations and plans;

(d) a detailed description of all primary and backup systems to insure compliance with such safety regulations and plans.

(e) whether the isopleth predictions are based on test results or solely theory.

7. The Military System Safety Program Plan and all underlying health and safety regulations should be attached in an appendix to the EIS.

8. An analysis of all potential future growth in use of SLC-7 and all hazards and risks associated with such future growth.

9. The EIS should contain a full discussion and analysis of all of the launches from VAFB at least through the year 2000 in addition to the Titan Centaur. The EIS should describe these launches by schedules noting the number, type, size and weight, reliability, projected date/time/duration and trajectory. There must be an analysis not only of the additive risk generated by the Titan Centaur, but also the annualized risk caused by the ongoing and future launch situations at VAFB during the operational life of the proposed SLC-7.

10. The handout distributed during the public scoping meeting indicate "safe distances" provisions from loaded launch vehicle to inhabited buildings of 1,700 feet and to uncontrollable public thoroughfares of 1,000 feet.

    (a) What makes these distances safe?

    (b) What test and experience information verifies these regulations?

11. The handout distributed during the public scoping meeting mentions that liquid propellants will be transported and stored on the site.

    (a) How much will be stored?

    (b) What is the likelihood of those storage facilities exploding similar to the recent explosion that has taken place in Henderson, Nevada, on May 4, 1988?

12. The EIS should specify in detail the type of incidents or accidents associated with the project which could cause injury, detriment, nuisance, or annoyance to persons, or wildlife, or which cause or have a natural tendency to cause damage to property. This discussion must describe the physical effects on humans animals and wildlife which might be affected by noise, toxic fumes, debris impact, etc.

13. The EIS should analyze the impact of potential accidents on surrounding land uses currently existing and land uses foreseeable during the operational lifetime of SLC-7.

14. The EIS should include a transportation analysis which studies and outlines the transportation routes available for evacuation of both on-site personnel and residents in surrounding areas.

15. The EIS should include a discussion of all mitigation measures which will limit the impacts of the project on the health, safety and welfare of the present and future human and wildlife populations on the base and surrounding area to a level of non-significance.

16. The EIS should include an analysis which discusses the controllability factors and standards and acceptable methods, locations, and processes to ensure "safe" destruction in the event of erratic flight. This discussion must describe what constitutes "safe" destruction.

17. The EIS should include descriptions of all clear and accident potential zones including sizes and compatible land use for such areas.

18. The EIS should include the size, shapes and locations of probable hazard footprint areas, based upon all possible launch factors, which will encompass all possible hazards associated with blast, sonic boom, noise, toxic fumes, debris impact and other hazardous situations.

19. The EIS should include a full discussion of any and all test results and historical safety records for all existing and past missile launch operations at VAFB and Cape Canaveral (e.g., prior Titan explosions).

20. The EIS should include a comparative discussion of the Environmental Impact Statements for all existing and past missile launch operations at Vandenberg AFB (the USAF stated at the scoping hearing that launches have been made over the 25 years). This discussion should include an analysis of factors which have been learned from previous missile launch experience which were not considered or incorrectly analyzed in any prior EIS.

21. The EIS should include a full discussion of the alternative actions that the Air Force is able to take in order to reduce the isopleth risk levels associated

with each physical hazard on the Bixby property. This discussion should include, but not be limited to:

(a) launch azimuth modifications;

(b) institution of dog legs;

(c) where only extremely complementary weather conditions are used for launch times, etc.

This discussion should analyze how the risk levels accordingly change for the Bixby property if these alternatives are implemented.

Bixby would like to formally offer the representatives of the private contractor preparing the EIS, Environmental Solutions, Inc. an opportunity to meet with us, visit our property and review our development plans.

In addition, Bixby hereby formally requests copies of all documents which will be used as references in the creation of the draft EIS. Please advise us whom we should contact to obtain them.

Thank you for this opportunity to comment on the EIS on the proposed SLC-7 for the Titan Centaur. Bixby looks forward to working with you on this matter in the future.

Very truly yours,

Kenneth C. Bornholdt

KCB/msc
cc: Environmental Solutions, Inc.

LETTER 11

HOLLISTER RANCH OWNERS' ASSOCIATION, Box 1000 – Bulito Canyon, Gaviota, California 93117 (805) 567-5020

May 10, 1988

HQ Space Division/DEV
ATTN: Mr. Robert Mason
Post Office Box 92960
Los Angeles, California 90009-2960

RE: Space Launch Complex 7,
Vandenberg Air Force Base, California

Dear Mr. Mason:

We have belatedly received a copy of the "Environmental Impact Analysis Process" for Space Launch Complex 7, and for which a public scoping meeting apparently was held in Lompoc earlier this month.

The 14,400-acre Hollister Ranch is situated on the coast between Gaviota State Beach Park, and the proposed construction of an additional major space launch complex closer to our area may be a matter of potential concern to us. Consequently, we would request that the proposed environmental report address at least the following issues:

1. The potential dangers, disturbances or other impacts that the proposed space complex might have on such populated areas as Jalama County Beach Park, the Hollister Ranch and Gaviota State Beach Park from space launches, launch destructions, toxic releases, or other consequences.

2. The potential dangers posed by the proposed space-launch activities as they may relate to the much higher hydrogen sulfide concentrations now anticipated to be produced by the Point Arguello Field offshore oil-and-gas platforms and to be transported by pipeline to the Point Concepcion area, and then across the Bixby Ranch, the Hollister Ranch and Gaviota State Beach Park to Chevron's processing facility at Gaviota. Hydrogen sulfide concentrations originally were reported to be 7,000 parts per million, but the estimates have now been raised to 20,000 parts per million and the County of Santa Barbara is requesting a supplemental environmental impact report on the Point Arguello Project because of the increased danger.

   For example, an interrupted space launch could damage the offshore platforms, some portion of the 25-mile pipeline to Gaviota, or the Gaviota processing facility, resulting in a major release of deadly hydrogen sulfide gas in areas of significant population.

These comments are being submitted to meet your indicated May 17 deadline. We also request that we be added to your mailing list for future notification of meetings and document availability at the following address:

Hollister Ranch Owners' Association
Box 1000, Bulito Canyon
Gaviota, California 93117
ATTN: Al Remmenga

Sincerely,

ALVIN J. REMMENGA
Ranch Manager

May 15, 1988

Dear Sir,

As a surviving employee of Lockheed Space Operations Company at Vandenberg Air Force Base, what I am about to propose may come as a surprise to you. In good conscious and in the interest of millions of American taxpayers, I strongly believe that Space Launch Complex 7 (SLC-7) should NOT be built for many reasons.

Please do not misunderstand me. I also believe that the Titan 4 program is a vital part of our nation's defense and the economic well-being of the communities surrounding Vandenberg.

Before I describe my reasons, let me list the options that are available:

1) a new SLC-7 could be built,
2) the Space Shuttle SLC-6 complex could be modified for both Shuttles and Titan 4s,
3) the SLC-6 could be permanently converted for use by Titan 4s only.

Regarding the first option to build a new SLC-7 for Titan 4s, the estimated cost has been stated between $500 million and $600 million. Yet I have heard that the $3.5 BILLION SLC-6 for launching Space Shuttles also started out with a $500 million price tag. I have no doubt that this estimate for the new SLC-7 is extremely low in order to receive approval and funding.

Recently $25 million for construction and $10 million for related facilities was approved for the new SLC-7 Titan 4 pad. Yet with these small appropriations, ten years will be needed to complete this new facility and consequently the 1994 deadline will not be met.

A second alternative would be to modify the existing SLC-6 pad for use by Shuttles and Titan 4s. Unfortunately this could slow the launch rates of both vehicles and result in some security problems. Also, as the Space Shuttle program at Vandenberg has shown, NASA and the Air Force do not get along very well. In addition, the involvement of two government agencies resulted in the west coast Shuttle program often having twice the paperwork of the east coast. Therefore, everyone agrees that this option is the least desirable.

The third alternative is to convert the SLC-6 Shuttle pad for use by Titan 4s only. Obviously, the biggest hurdle to this is the plans for polar orbits of satellites designed only to fit in the Shuttle's cargo bay. But the earliest scheduled date is in 1995! In addition, the Shuttle will be obsolete by 1999 when the National Aerospace Plane is operational.

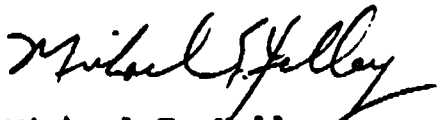
Also of concern is the fifty remaining people on the Vandenberg Space Shuttle project. I believe these people could easily move over to the "Convert SLC-6 for Titan 4s" project. This would remove any fears of further unemployment in the surrounding communities. In terms of the grounded Shuttle payloads, the money saved from not building SLC-7 could be used to retrofit the payloads for Titan 4 launches or find a way to move the payloads into a polar orbit once they are in space.

To summarize, the Air Force has shown how to get into space on a tight budget unlike its NASA counterpart. In addition, since most people at Kennedy Space Center believe Vandenberg will never launch a Shuttle, lets put this troubled space project behind us. Lets stop sobbing over the past and reach for the future with its challenges including the Titan 4 and National Aerospace Plane programs. Lets go forward into space including the commercialism of space.

Therefore, I ask of you in the name of the millions of American taxpayers not knowledgeable on this subject, to give up the west coast Space Shuttle capability, fund the conversion of SLC-6 to Titan 4s, stop funding the expensive SLC-7 and work toward getting other space projects such as the National Aerospace Plane to Vandenberg Air Force Base.

Thank you for taking the time to read this letter.

Respectfully,



Michael E. Kelley
Lompoc, California

910 W. Lemon
Lompoc, CA 93436

LETTER 13

WRITTEN STATEMENT

U.S. AIR FORCE PROPOSED TITAN CENTAUR SPACE LAUNCH COMPLEX 7 ENVIRONMENTAL IMPACT STATEMENT PROCESS VANDENBERG AIR FORCE BASE, CALIFORNIA

(Submit to Air Force representative at Scoping Meeting on May 3, 1988 or mail to: HQ Space Division/DEV, Attention: Mr. Robert Mason, Post Office Box 92960, Los Angeles, California 90009-2960. Mailed statements should be submitted by May 17, 1988.)

1. Most of the interest (concern?) I have involves the socioeconomic impacts the new project will have in my community. The oil pipeline project in Gaviota and the just announced Atlas/Centaur award to General Dynamics for increased work at Vandenberg AFB should be taken into account as well as other on-going programs (e.g., Peacekeeper, Minuteman, Midgetman, Titan 34D, etc.).

2. Many of the environmental baseline studies that were done for the Space Shuttle program at Vandenberg AFB should be applicable to the Titan IV/Centaur program and should be reviewed and applied as applicable and the DES bibliography should so reference them.

3. Although propellent routing was extensively reviewed for the Shuttle Environmental Statement, this has become a big issue in the community this past year. This must, once again, be thoroughly addressed.

Submitted By: Aubrey B. Sloan
Name (please print)

966 Diamond Drive
Street Address

Santa Maria, CA 93455
City State Zip

WRITTEN STATEMENT

U.S. AIR FORCE PROPOSED TITAN CENTAUR SPACE LAUNCH COMPLEX 7 ENVIRONMENTAL IMPACT STATEMENT PROCESS VANDENBERG AIR FORCE BASE, CALIFORNIA

(Submit to Air Force representative at Scoping Meeting on May 3, 1988 or mail to: HQ Space Division/DEV, Attention: Mr. Robert Mason, Post Office Box 92960, Los Angeles, California 90009-2960. Mailed statements should be submitted by May 17, 1988.)

I HOPE THAT THESE QUESTION'S WILL BE ANSWERED AT THE NEXT MEETING.

MANY PEOPLE HAVE TAKEN A PERSONAL INTREST IN JALAMA BEACH COUNTY PARK AND ARE GREATLY CONCERNED ABOUT KEEPING IT OPEN FOR PUBLIC USE. FRIENDS AND I PUT TOGETHER THIS QUESTIONAIRE/PETITION TO TRY TO CONVEY TO YOU THE AMOUNT OF PUBLIC INTREST THAT WAS LACKING AT THE MAY 3RD MEETING IN LOMPOC.

I'M LOOKING FORWARD TO DISCUSSING THIS MATTER IN FURTHER DETAIL! ANY RETURN INFORMATION WOULD BE APPRECIATED! SEE YOU AT THE NEXT MEETING!

Submitted By: MARK HOPSON
Name (please print)

1317 NORTH V ST #26
Street Address

LOMPOC CAL 93436
City State Zip

Mr. Robert Mason
PO Box 92960
LA CA 9009-2960

The following citizens are concerned with the proposal of US Air Force Titan Centaur Space Launch Complex 7's impact on Jalama Beach Park. Our basic concerns are:

1) The possible permanent closure of Jalama Beach County Park?
2) How much park closure time is required for each launch and approximately how frequently will launches take place?
3) What emergency evacuation procedures are planned for Jalama Beach County Park?

We sincerely hope that these questions will be answered.

NAME	ADDRESS	STATE
David A Durant	721 N 8TH	LOMPOC CA 93436
Mark D Hopson	1317 N V St #26	LOMPOC CA 93436
James Peach	6625 #2 Del Playa	I.V. Cal 93117
Zeke Boxton	695 #4 Trigo	I V ca 93117
Mike Kelly	6666 Sueno	I.V. ca 93117
Steve Sorkin	6685 Del playa	Gleta Ca 93117
Joe Wisely	6512 Segovia RD.	Gleta 93117
[illegible] (Dominick)	520 North N St	Lompoc Ca 93436
[illegible]	Jalama Beach Star Route	Lompoc 93436 Calf
Mike Andersson	Jalama beach Star Rt	Lompoc Calif.
Karin Andersson	Jalama Beach Star Rt	Lompoc, Ca 93436
John Reinhuser	316 S I	Lompoc 93436 CALIF
Laura M Cooper	1316 E. Palmetto	Lompoc, Ca 93436
Judy G. Cooper	1316 E. Palmetto	Lompoc, Ca. 93436
Nicole M Garcia	1017 N. Poppy	Lompoc, CA. 93436
Michael Keenan	900 W. DATE	LOMPOC CA 93436
Jennifer Bessette	258 Alcair Ave.	Lompoc CA. 93436
Gary Gault	2401 Preisker Ln #8	Santa Maria, Ca 93454
Raymond Bellows	820 w maple	Lompoc CA 93436
Tony CAYABYAB	710 NORTH 1ST APT B	LOMPOC CA 93436
Jimmy WEST	913 NO THIRD ST.	Lompoc Ca. 93436
K.K. Rodriguez	1116 NO F ST	Lompoc CA. 93436

TABLE B.1

PLANT SPECIES OBSERVED IN THE STUDY AREA

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Acacia longifolia	golden wattle					o		
Achillea millefolium	yarrow	s	s	o			s	o
Adenostoma fasciculatum	chamise	c					o	
Adiantum jordani	California maidenhair				o		o	
Agoseris apargioides				o				
Agoseris grandiflora	dandelion		s					
Agoseris heterophylla	mountain dandelion		s			o		
Agrostis diegoensis	thin grass	o	s	s			o	
Ambrosia chamissonis	beachbur							s
Amsinckia intermedia	fiddleneck			c		o		
Amsinckia spectabilis var. *microcarpa*	fiddleneck		s	c				s
Anagallis arvensis	scarlet pimpernel	s	s	s	s	c		
Anaphalis margaritacea	pearly everlasting						s	
Anthemis cotula	mayweed			o		o		
Anthriscus scandicina	bur chervil						o	
Arctostaphylos purissima	Purisima manzanita	c					s	
Artemisia californica	coastal sagebrush	o	a	c		o		a
Artemisia douglasiana	mugwort		s		c		s	
Artemisia dracunculus	tarragon		s			o		s
Aster radulinus			o		o			
Astragalus nuttallii	locoweed		s	c				c
Atriplex californica								s

(1) Habitats:
- C = Chaparral
- S = Central coastal scrub/Venturan coastal sage scrub
- G = Grassland
- W = Riparian and other wetlands
- D = Disturbed areas
- N = North-facing slopes (see text)
- B = Central dune and coastal bluff scrub

(2) Abundance:
- o = occasional
- s = scattered
- c = common
- a = abundant

Source: Hickson 1988.

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
*Atriplex lentiformis**	saltbush					s		
Atriplex semibaccata	Australian saltbush		o	o		a		c
Avena barbata	slender wild oat		s	a		a		c
Baccharis glutinosa	mulefat				s			
Baccharis pilularis ssp. *consanguinea*	coyote brush	c	a	c	a	c	o	c
Brassica geniculata	mustard		o	c		c		
Brassica nigra	black mustard		s	c		s		
Brassica tournefortii			s			c		
Bromus carinatus	California brome		s					
Bromus diandrus	ripgut brome	o	s	a		c		
Bromus mollis	soft chess	o	o	a		c		
Bromus rubens	red brome	o	s	a		a		s
Calandrinia ciliata var. *menziesii*	red maids		s	s		c		
Calyptridium monandrum		s	s					
Calystegia macrostegia ssp. *cyclostegia*	morning-glory	s	s	s			s	s
Camissonia cheiranthifolia ssp. *cheiranthifolia*	beach primrose							s
Camissonia micrantha		o	s	s				s
Camissonia strigulosa		o	o					
Capsella bursa-pastoris	sheperd's purse		o	s		s		
Cardionema ramosissimum	sand mat	s	s	s		s		s
Carex globosa	round-fruited sedge	s						
Carex praegracilis	clustered field sedge				s			
Carpobrotus aequilaterus	sea fig							a
Carpobrotus edulis	ice plant	o	s	s		a		a
Castilleja affinis	Indian paintbrush	s	s	s			s	s
Ceanothus cuneatus	buck brush	s						
Ceanothus impressus var. *impressus*	Santa Barbara ceanothus	a	s			s		
Ceanothus thyrsiflorus	blue blossom	a						
Centaurea melitensis	tocalote	s	s	c		s		s
Cerastium glomeratum	mouse-ear chickweed				s			
Chenopodium californicum	goosefoot	s	s	s				
Chenopodium murale	nettle-leaved goosefoot		s			s		s

*Plant used in revegetating areas around SLC-6, would not otherwise occur in the study area.

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Chlorogalum pomeridianum	soap plant, amole	o	s					
Chorizanthe coriacea		s	s	s				s
Chorizanthe diffusa var. *diffusa*		s	s	s				s
Cirsium brevistylum	Indian thistle		o				o	
Cirsium occidentale	Western thistle	s	s	s				s
Cirsium vulgare	bull thistle			s		s		
Claytonia perfoliata	miner's lettuce	s	s		s		s	
Collinsia heterophylla	chinese houses	o	s				s	
Conicosia pugioniformis (L.) N.E. Br.	thin-leaved ice plant	o	s			s		s
Conium maculatum	poison hemlock				a	a		
Convolvulus arvensis	bindweed		o			o		
Conyza sp.	horseweed	s	s	s		a		
Coreopsis gigantea	giant coreopsis		s				c	c
Corethrogyne filaginifolia	cudweed aster		c	s			s	s
Cortaderia jubata	pampas grass					o		
Cotula australis					s			
Crassula erecta		s	s					
Croton californicus var. *californicus*		s	c	s				s
Cryptantha leiocarpa		o	s	s		o		s
Cupressus macrocarpa	Monterey cypress		o			o		
Cuscuta sp.	dodder		o					o
Daucus pusillus	rattlesnake weed	o	s	s		s		s
Delphinium parryi ssp. *blochmaniae*			s	s				o
Descurainia pinnata ssp. *menziesii*	tansy mustard	o	s	s		s		s
Dichelostemma pulchellum	blue dicks	s	s	s			s	s
Dichondra occidentalis			s					
Dodecatheon clevelandii ssp. *insulare*	shooting star		o	o				
Dudleya caespitosa	live-forever							s
Dudleya lanceolata	live-forever		s	o				
Ehrharta calycina	Veldt grass			s		c		s
Eleocharis sp.	spikerush				o			
Elymus condensatus	giant rye	s	a	o				
Elymus glaucus	Western rye		s	s			o	
Emmenanthe penduliflora var. *penduliflora*	whispering bells		o					

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Encelia californica	bush sunflower	o	a		c			s
Eremocarpus setigerus	turkey mullein			s				
Erigeron foliosus var. *foliosus*				o				o
Erigeron sanctarum	saint's daisy	o						
Eriogonum elongatum				s				
*Eriogonum giganteum**	St. Catherine's lace					s		
Eriogonum parvifolium var. *parvifolium*	seaside buckwheat	s	c	s				c
Eriophyllum confertiflorum	golden yarrow	s	c	s				
Eriophyllum multicaule			s					
Eriophyllum staechadifolium var. *artemisiaefolium*			s				c	c
Erodium botrys	broad-leaved filaree		s	c		c		
Erodium cicutarium	redstem filaree	o	s	s		c		
Erodium moschatum	whitestem filaree			s		s		
Erysimum suffrutescens var. *grandifolium*	larged-leaved wallflower		s					s
Eschscholzia californica	California poppy		s	a		c		a
Eucalyptus globulus	blue gum				s	s		
Eucrypta chrysanthemifolia			s					
Euphorbia crenulata	Chinese caps		o					
Filago californica		s	c					s
Filago gallica		s	s	s		s		
Fragaria vesca ssp. *californica*	wild strawberry		o				o	
Frankenia grandifolia var. *grandifolia*	alkali heath							s
Galium andrewsii		s						
Galium aparine	bedstraw				s			
Galium sp. *(nuttallii?)*	bedstraw	s	s		s		s	
Gaultheria shallon	salal						s	
Gilia capitata ssp. *abrotanifolia*		s			s		s	x
Gnaphalium beneolens			s	s				
Gnaphalium bicolor	bicolored cudweed	s	s					s
Gnaphalium californicum	green everlasting	s	s	s				s
Gnaphalium chilense var. *chilense*		s	s					
Gnaphalium luteo-album			s			s		

*Plant used in revegetating areas around SLC-6, would not otherwise occur in the study area.

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Gnaphalium purpureum		s	s	s				s
Gnaphalium ramosissimum	pink everlasting		o					
Grindelia robusta	gum plant		s			s		
Haplopappus ericoides	mock heather	s	a	s				c
Haplopappus squarrosus	sawtooth goldenbush		c	s				c
Haplopappus venetus ssp. *sedoides*							s	
Haplopappus venetus ssp. *vernonoides*		o	c	s				
Hedypnois cretica		o	s	s		s		s
Helenium puberulum	sneezeweed				o			
Hemizonia fasciculata	tarweed		s	c				
Hemizonia inscrescens (Hall ex Keck) *Tanowitz ssp. increscens*	tarweed		s	s				
Hemizonia sp.	tarweed			s				s
Hesperocnide tenella		s	s		s		s	
Heteromeles arbutifolia	toyon	s	s					
Hordeum californicum	meadow barley							o
Hordeum leporinum	foxtail		s	c		s		
Horkelia cuneata		s	c	s				
Hypochoeris glabra	smooth cat's ear	s	s	c		c		s
Iris douglasiana	Douglas iris	o						
Juncus balticus	wire rush				s			
Juncus effusus var. *brunneus*	bog rush				s			
Juncus phaeocephalus (?)					s			
Koeleria macrantha	june grass		s	s				s
Lamarckia aurea	goldentop		s	c		c		s
Lasthenia chrysostoma	goldfields		s	a				a
Lathyrus laetiflorus ssp. *barbarae*	wild sweetpea	o		s			o	s
Lavatera cretica						s		
Layia platyglossa	tidy tips			a				c
Lepidium sp.		s	s	s				s
Linaria canadensis var. *texana*	toadflax		s			s		
Lithophragma affine	woodland star				o			
Lobularia maritima	sweet alyssum					o		
Lolium perenne ssp. *multiflorum*	Italian ryegrass			c		c		

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Lotus junceus	deerweed	s	c	c		s		c
Lotus subpinnatus			o	o				
Lupinus albifrons var. *douglasii*	silver lupine		c	s				
Lupinus arboreus	coastal bush lupine		s	s		s		a
Lupinus chamissonis	dune lupine							c
Lupinus nanus	sky lupine		s	c				c
Luzula subsessilis	common wood rush	s						
Madia sativa	Chilean tarweed		o			s		
Malva parviflora	cheeseweed			s		c		
Marah fabaceus	wild cucumber	c	s					s
Marrubium vulgare	horehound					s		
Matricaria matricarioides	pineapple weed	o		o		s		
Medicago polymorpha	bur clover		s	c		c		
Melica imperfecta	coast range melic	s	s	s	o			o
Melilotus indicus	yellow sweet clover			s		s		
Mesembryanthemum crystallinum	crystalline ice plant		s	s		s		s
Microseris linearifolia			s					
Mimulus aurantiacus	bush monkey flower	c	c				c	
Mimulus guttatus var. *guttatus*	monkey flower				o			
Mirabilis californica	wishbone bush		c					c
Monardella undulata var. *frutescens*	curly-leaved monardella		o			o		
Monardella undulata frutescens x *M. crispa*	hybrid		o					
Monardella villosa var. *obispoensis*								o
Mucronea californica (Benth.)			s					s
Navarretia atractyloides		o						
Nicotiana glauca	tree tobacco					o		
Orthocarpus purpurascens var. *pallidus*	owl's clover		s	s		s		s
Oryzopsis miliacea	rice grass			s	o			
Oxalis albicans ssp. *californica*	sorrel		o	o				
Oxalis pes-caprae	sour-grass			s		s		s
Parapholis incurva	sickle grass							o
Parietaria hespera var. *californica*			o					
Pennisetum setaceum	fountain grass					o		
Pennisetum villosum	feather top					o		

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Phacelia distans	wild heliotrope		s					
Phacelia douglasii			s	s		s		
Phacelia ramosissima var. *montereyensis*	branching phacelia		s	s				c
Phalaris stenoptera	Harding grass					o		
Pholistoma auritum	fiesta flower		o		o			
Picris echioides	bristly ox tongue		o			s		
Pityrogramma triangularis var. *triangularis*	goldback fern	o						
Plantago coronopus						c		s
Plantago erecta			s	s		s		
Poa annua	annual bluegrass				s			
Poa scrabrella			s	s				
Polycarpon depressum		s	s					
Polycarpon tetraphyllum	four-leaved all seed	o	s	s	s	c		
Polypodium californicum var. *californicum*	California polypody						s	
Polystichum munitum var. *munitum*	Western sword fern						o	
Potentilla glandulosa	sticky cinquefoil	o	o				s	
Pteridium aquilinum var. *pubescens*	Western bracken	c	c		c	s	c	
Pterostegia drymarioides	fairy mist	s	s		s		s	
Quercus agrifolia	coast live oak	s	s					
Rafinesquia californica			s	s				s
Ranunculus californicus var. *californicus*	California buttercup		s	s			s	s
Raphanus sativus	wild radish					c		
Rhamnus californica ssp. *californica*	coffee berry	s	o		s		o	o
Rhamnus crocea	redberry	o						
Rhus integrifolia	lemonade berry		c					s
Rorippa nasturtium-aquaticum	watercress				s			
Rorippa palustris					c			
Rubus parviflorus var. *velutinus*	thimbleberry						o	
Rubus ursinus	wild blackberry		s		c		c	
Rumex conglomeratus	green dock		s	s				
Rumex crispus	curly dock			o				
Rumex sp. *(angiocarpus?)*	sheep sorrel		s	s		c		
Sagina occidentalis			s		s			
Salix lasiolepis var. *lasiolepis*	arroyo willow				a			

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
Salsola iberica	Russian thistle					s		
*Salvia apiana**	white sage					o		
Salvia columbariae	chia		s	s				
Salvia leucophylla	purple sage		a	o				
Salvia mellifera	black sage	s	a	o				s
Salvia spathacea	hummingbird sage	s	s		s		s	s
Sambucus mexicanus	elderberry		s		c			
Sanicula crassicaulis	snakeroot	s	s		s		s	
Scrophularia californica	California figwort	s	s		s			s
Scrophularia californica x *atrata Hybrid*		s		s			s	
Senecio californicus			o					s
Silene gallica	windmill pink		s	s		c		
Silene laciniata	Indian pink		s					
Silybum marianum	milk thistle		s	s	c	s		
Sisyrinchium bellum	blue-eyed grass			s				c
Solanum douglasii	Douglas nightshade	s	s					
Solanum xanti var. *xanti*	chaparral nightshade	s	s				s	
Solidago californica	goldenrod	o	s					s
Solidago sp.			s				s	
Sonchus asper	prickly sow-thistle	o	o	s	s	s	s	s
Spergula arvensis	corn spurry		s	s	s	c		
Spergularia macrotheca var. *macrotheca*								s
Stachys bullata	wood mint	s	c	s	c		c	
Stellaria media	chickweed	s	s		c	s		
Stephanomeria elata			o					
Stipa lepida	small-flowered stipa		o	s	s			
Stipa pulchra	purple needlegrass		s	s				s
Tauschia hartwegii			s	s				
Tetragonia tetragonioides	New Zealand spinach					s		s
Thalictrum polycarpum	meadow rue				o			
Toxicodendron diversilobum	poison oak	s	c	s	c	o	s	s

*Plants used in revegetating areas around SLC-6, would not otherwise occur in the study area.

TABLE B.1
(continued)

SPECIES	COMMON NAME	Habitat Affinity[1] and Abundance[2]						
		C	S	G	W	D	N	B
*Trifolium hirtum**	rose clover					s		
*Trifolium incarnatum**	crimson clover					s		
Trifolium tridentatum	tomcat clover		s	s				
Urtica holosericea	giant creek nettle				c			
Vaccinium ovatum	huckleberry						a	
Verbena lasiostachys var. *lasiostachys*					s	s		
Veronica peregrina					o			
Vicia sp. *(benghalensis?)*	vetch			s		s		
Viola pedunculata	Johnny jump-up		s	s				s
Vulpia bromoides (L.) Gray	fescue			a		s		s
Vulpia myuros (L.) K.C.	rattail fescue	s	s	a		s		
Vulpia octoflora (Walt.)Rydb.	six-weeks fescue	s	s	c		s		s
Zauschneria californica ssp. *californica*	California fuschia		o	o	s		s	

*Plants used in revegetating areas around SLC-6, would not otherwise occur in the study area.

TABLE B.2

FEDERAL CANDIDATE SPECIES AND SPECIAL INTEREST PLANTS OCCURRING AT THE CYPRESS RIDGE SITE

SCIENTIFIC NAME/ COMMON NAME	Federal[1] Status	CNPS[2] Status	Comments on significance and distribution within the site[3]
Amsinckia spectabilis var. *microcarpa* fiddleneck		Ap.1	Endemic to west Santa Barbara and San Luis Obispo Counties. Commonly scattered in grassland and burned area.
Ceanothus impressus var. *impressus* Santa Barbara ceanothus		Ap.1	On sandy mesas in west Santa Barbara and San Luis Obispo Counties. A few unburned individuals on north edge of burned scrub. Presumably will reseed in burned area.
Dichondra occidentalis Western dichondra		LA	Munz and Keck (1959) cite range as coastal Los Angeles to San Diego Counties and Santa Catalina, Santa Rosa, and Santa Cruz Islands. Common on upper slopes of site. Identified from flowering material according to Hoover (1970).
Erysimum suffrutescens var. *grandifolium* large-leaved wallflower		LA	Endemic to west Santa Barbara and San Luis Obispo Counties. Approximately 75 to 100 individuals in unburned scrub east of Coast Road. Identified from flowering and fruiting material according to Munz and Keck (1968 supplement).
Monardella undulata var. *frutescens* curly-leaved monardella	C2	L1B	A population of 600 to 700 flowering plants and many more seedlings along fence east of Coast Road. Smaller populations of 10 to 60 flowering plants scattered throughout site. Approximately 800 to 1,000 plants total onsite. Flowering material identified by J. Jokerst (pers. comm. 1988).
Monardella undulata var. *frutescens* x *M. Crispa* crisp monardella			An unknown number of individuals of this hybrid between the two Federal Candidate plants, as identified by J. Jokerst.

(1) C2 = Category 2 Federal candidate (data is not sufficient to support listing).

(2) CNPS (California Native Plant Society):
Ap.1 = Plants considered but not listed. (Those here were considered too common for listing).
LA = Of limited distribution.
L1B = Rare and endangered in California and elsewhere.

(3) Sources: Munz and Keck (1959), Smith (1976), and field observations by Hickson, project botanist.

TABLE B.3

CANDIDATE PLANT SPECIES FOR FEDERAL LISTING AS ENDANGERED OR THREATENED ON VAFB

SPECIES	STATUS[1] Federal	State	CNPS[2]	Distribution on VAFB[3] and Distance of Closest Known Population from the Project Area
Aphanisma blitoides aphanisma	C2		3	Headlands near Lion's Head (Smith 1983), 21 miles north of Project Area. Also at Point Sal (Smith 1976), in coastal bluff scrub or dune scrub.
Arctostaphylos rudis shagbark manzanita	C2		4	In central maritime chaparral on San Antonio Terrace, Burton Mesa, and Lompoc Terrace (approximately five miles northwest of project area). Apparently found near SLC-6 in 1977 (Beauchamp and Oberbauer 1977), not relocated during this study.
Arenaria paludicola swamp sand wort	C2		1B	No records for VAFB. Occurs in coastal freshwater marshes near Oso Flaco Lake, San Luis Obispo County (Smith 1976).

(1) C1 = Federal Category 1 candidate (sufficient information exists to support listing as threatened or endangered)
C2 = Federal Category 2 candidate (possibly appropriate for listing, but information is insufficient at this time)
R = Rare
E = Endangered

(2) California Native Plant Society lists:
1B = Plants of highest priority, rare and endangered in California and elsewhere
2 = Rare and endangered in California but more common elsewhere
3 = Plants about which more information is needed
4 = Plants of limited distribution in California (a watch list)
Ap.1 = (Appendix 1) plants considered for lists 1 through 4 but not included

(3) Several species included in this list have been suggested by the USFWS as possibly occurring on VAFB, although there are no records of the plants from the base.

TABLE B.3
(continued)

SPECIES	STATUS[1] Federal	State	CNPS[2]	Distribution on VAFB[3] and Distance of Closest Known Population from the Project Area
Baccharis plummerae ssp. *glabrata* Hoover's baccharis	C2			No records for VAFB. Occurs in northwestern San Luis Obispo County (D. Keil, pers. comm. 1988). Plummer's baccharis (*Baccharis plummerae*) occurs near Point Sal (Schmalzer and Hinkle 1987) and in the Santa Ynez Mountains.
Calystegia collina ssp. *venusta*	C2		3	No records for VAFB. Type locality is 35 miles northwest of project area. Not expected near the coast (S. Junak, pers. comm. 1988).
Castilleja mollis soft-leaved paintbrush	C2		1B	Back dunes from Casmalia Beach to Cypress Ridge, Santa Rosa Island (Smith 1983). All mainland plants will be considered *C. affinis* in new treatment of this taxon (L. Heckard, pers. comm. 1988).
Ceanothus impressus var. *nipomoensis*	C2		Ap.1	No records for VAFB. Occurs on Nipomo Mesa in San Luis Obispo County. Its varietal status is questionable (Hoover 1970). Var. *impressus* is found primarily in central maritime chaparral, from south slope of Cypress Ridge (this study), Lompoc Terrace, Burton Mesa, San Antonio Terrace to Point Sal (Smith 1976).
Chorizanthe pungens var. *pungens* Monterey spine flower	C2		1B	On Burton Mesa according to Smith (1976); however, the collection on which this was based has recently been determined by J. Reveal to be *C. diffusa* var. *diffusa*. The closest known locality for *C. pungens* is in dunes near Oso Flaco Lake in San Luis Obispo County (Smith 1976).
Cirsium loncholepis La Graciosa thistle	C2		1B	Smith (1983) reported populations in marsh areas near Santa Ynez River mouth, 7.5 miles north of project area. Efforts to relocate these in 1986 were unsuccessful; although the species may be present as seed in the soil, requiring some disturbance to establish (R. Nichols, pers. comm. 1988).

TABLE B.3
(continued)

SPECIES	STATUS[1] Federal	State	CNPS[2]	Distribution on VAFB[3] and Distance of Closest Known Population from the Project Area
Cirsium rhothophilum Surf thistle	C2		1B	In central foredune community from Rocky Point, one-quarter mile west of project area, to Shuman Canyon; a large population at Point Arguello (CNDDB).
Cordylanthus rigidus ssp. *littoralis* seaside bird's beak	C1	E	1B	Near Santa Lucia Canyon on VAFB (USAF 1987c) in disturbed central coastal scrub, approximately 12 miles northeast of project area.
Dithyrea maritima beach spectacle-pod	C2		1B	In central foredune community on VAFB (Smith 1983). Not observed in dunes at Rocky Point (this study). Possibly occurs at Point Arguello (one-half mile west of project area) and northward.
Eriodictyon capitatum Lompoc yerba santa	C1	R	1B	One colony northwest of intersection of 35th Street and California Avenue, 11 miles north of the project area; two colonies in Pine Canyon (Smith 1983). Also occurs northeast of Point Conception and on La Graciosa Ridge near Orcutt (Jacks et al. 1984).
Erysimum insulare island wallflower	C2		1B	At Surf (Smith 1976), six miles north of project area.
Fritillaria grayana	C2			USFWS has suggested that this plant may occur on VAFB, but apparently uses this name for *F. roderickii*, which occurs only in Mendocino County (Smith and York 1984). *F. grayana* has been used as a synonym for the more common *F. biflora*, which occurs from Santa Barbara to Point Sal and inland (Smith 1976).
Monardella crispa crisp monardella	C2		1B	Some confusion exists over this and the next taxon (see text). Together, they occur in dunes and disturbed sandy sites in central dune scrub and central coastal scrub from the Cypress Ridge proposed site to Point Sal and north to near Oceano in San Luis Obispo County.

TABLE B.3
(continued)

SPECIES	STATUS[1] Federal	State	CNPS[2]	Distribution on VAFB[3] and Distance of Closest Known Population from the Project Area
Monardella undulata var. *frutescens* curly-leaved monardella	C2		1B	See above.
Nasturtium gambellii Gambel's watercress	C2		3	One population in Barka Slough (Dial 1980), 16 miles northeast of study area.
Sanicula hoffmannii Hoffmann's sanicle	C2		4	At Point Sal (Smith 1976). Occurs in central coastal scrub. No record from VAFB.
Scrophularia atrata black-flowered figwort	C2		3	Common over much of VAFB in many habitats, frequently hybridizing with California figwort (*S. californica*) (Smith 1983). Plants with intermediate traits are common in the study area.

TABLE B.4

FEDERAL- OR STATE-LISTED ENDANGERED AND THREATENED WILDLIFE SPECIES AND CANDIDATE SPECIES FOR FEDERAL LISTING AS ENDANGERED OR THREATENED THAT MAY OCCUR IN THE STUDY REGION OR PROJECT AREA

SPECIES	STATUS[1] Federal	State	Potential Occurrence in the Study Region or Project Area[2]
BIRDS			
Pelecanus occidentalis californicus California brown pelican	E	E,P	Known to forage over nearshore coastal waters and to roost at Point Sal, Purisima Point, San Antonio Creek, Santa Ynez River mouth and Point Arguello Boathouse breakwater; present year-round with peak numbers occurring from July through November (Briggs et al. 1983)
Plegades chihi white-faced ibis	C-2		Uncommon transient away from prefered fresh water marsh/pond habitats (Lehman 1982); a single sighting exists for the vicinity of the project area.
Buteo regalis ferruginous hawk	C-2		Uncommon fall and winter visitor; recent sightings both north and south of the project site (Lehman 1982; Storrer, pers. comm. 1988); known to forage over open country.

(1) C-2 = Federal Category 2 candidate (possibly appropriate for listing as threatened or endangered, but information insufficient at this time)
E = endangered
T = threatened
R = rare
P = fully protected
SSC = species of special concern (Category 1 - potential for immediate extirpation in California, Category 2 - declining in a large portion of their range in California [Remsen 1978])
S = sensitive as defined in Jennings (1983)

(2) Some of the species included in this table are known to occur in the study region, but no data is available to verify their presence or absence from VAFB.

TABLE B.4
(continued)

SPECIES	STATUS[1] Federal	State	Potential Occurrence in the Study Region or Project Area[2]
BIRDS (Continued)			
Haliaeetus leucocephalus Southern bald eagle	E	E,P	Formerly nested on the Northern Channel Islands and in coastal areas in Santa Barbara County; currently a casual late fall and early winter visitor to coastal areas of Santa Barbara County and a regular winter visitor in small numbers at Lake Cachuma.
Falco peregrinus anatum American peregrine falcon	E	E,P	Formerly nested on South VAFB; currently a transient visitor along the coast during the fall and winter; recent sightings both north and south of the project sites; potential breeding habitat on VAFB occurs at Point Sal, in the vicinity of the Boathouse and at Point Arguello; known foraging habitat on South VAFB occurs at Point Arguello and at the mouth of the Santa Ynez River.
Laterallus jamaicensis coturniculus California black rail	C-2	T	One possible sighting from the marsh at the Santa Ynez River mouth; very rare (casual) transient or winter visitor to marsh habitats in the study region.
Charadrius alexandrinus nivosus Western snowy plover	C-2		Winters and breeds on beaches from Point Conception to Point Sal (Lehman 1982; Page and Stenzel 1981; Page et al. 1986); could frequent sandy beaches adjacent to the project sites.
Numenius americanus long-billed curlew	C-2		Common transient visitor during the winter and fairly common in late spring and early summer on sandy beaches at VAFB (Lehman 1982).
Sterna antillarum browni California least tern	E	E,P	Nests in sand dunes near Oso Flaco Lake, Santa Maria River mouth, San Antonio Creek, Purisima Point and at the Santa Ynez River mouth; occasional along nearshore waters adjacent to the project sites during migration; present from late April through August.
Sterna elegans elegant tern	C-2	SSC	Common post-breeding visitor during the late summer and early fall along the coast in the study region; a single sighting exists for this species in the project area; expected to roost at the mouths of the Santa Ynez River and San Antonio Creek.

TABLE B.4
(continued)

SPECIES	STATUS[1] Federal	State	Potential Occurrence in the Study Region or Project Area[2]
BIRDS (Continued)			
Vireo bellii pusillus Least Bell's vireo	E	E	Casual visitor during migration along the coast of Santa Barbara County; possible breeding habitat occurs on North VAFB at Barka Slough; summer visitor/breeder along the Santa Ynez River east of Gibralter Dam.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	C-2	T	Casual transient not expected to occur in the vicinity of the project site; historic breeder in dense cottonwood and willow riparian woodlands in central California; nearest suitable nesting. Habitat occurs at Barka Slough where the species was observed in 1982 (Lehman 1982).
Agelaius ricolor tricolored blackbird	C-2		Uncommon visitor to open fields in the project area during the non-breeding season; local resident breeds April-July in large colonies in dense stands of bulrushes and cattails; flocks are known to forage in agricultural fields and pastures (Lehman 1982).
HERPETOFAUNA			
Rana aurora draytoni California red-legged frog	C-2	P,SSC	Frequents unpolluted freshwater marshes with borders of cattails and slow-moving freshwater streams having thick growths of Arroyo Willow (Collins, P. W. 1988); has been recorded in San Antonio, Shuman, Honda and Jalama Creeks and in the Santa Ynez River (Reilly et al. 1976; Mahrdt et al. 1976).
Bufo microscaphus californicus arroyo toad	C-2	SSC	Inhabits dry arroyos and sandy washes in central and southern California; has only been found at two localities in Santa Barbara County, both of which are well east of the study region; this species is not expected to occur in the study region or project area.
Clemmys marmorata Western pond turtle	C-2	S,SSC	Frequents perennial streams, ponds and freshwater lakes; known to occur in San Antonio Creek, Santa Ynez River, Jalama Creek, and Canyon Lakes (Reilly et al. 1976; Mahrdt et al. 1976; Sweet, pers. comm. 1988).

TABLE B.4
(continued)

SPECIES	STATUS[1] Federal	State	Potential Occurrence in the Study Region or Project Area[2]
FISH			
Eucyclogobius newberryi tidewater goby	C-2	SSC	Coastal lagoons and marshes of larger perennial streams; known to occur at 21 localities from Point Conception to Point Piedras Blancas (USAF 1987a); on VAFB at Shuman, San Antonio, and Jalama Creeks and Santa Ynez River (Swift 1984).
Gasterosteus aculeatus williamsoni unarmored threespine stickleback	E	E,P	Native to San Antonio Creek; transplanted population established in Honda Creek (Irwin and Soltz 1982).
MAMMALS			
Euderma maculata spotted bat	C-2		Known to occur throughout western North America but has never been collected from central California; one possible sighting in Happy Canyon, 36 miles northeast of project area; species is not expected to occur in the project area other than as a casual transient during migration.
Plecotus townsendii townsendii Townsend's big-eared bat	C-2	SSC-2	Frequents the humid coastal regions of northern and central California, where it roosts in buildings, limestone caves and mine tunnels (Williams 1986); no colonies known to exist on VAFB; nearest colonies occur in the Santa Ynez Valley about 45 miles east of the project site and on Santa Cruz Island (Collins, unpubl. data).
Eumops perotis californicus California mastiff bat	C-2	SSC-2	No sightings or specimens from San Luis Obispo, Santa Barbara or Ventura Counties; thought to be resident at lower elevations in the coastal basins of Southern California; this species is not expected to occur in the project area other than as a very casual transient during migration.

TABLE B.5

REGIONALLY RARE OR DECLINING WILDLIFE KNOWN OR EXPECTED TO OCCUR WITHIN THE STUDY REGION AND PROJECT AREA

SPECIES	Species of Special Concern[1]	Blue List[2]	Regionally Rare and Declining[3]	STATUS[4] Study Region	STATUS[4] Project Area	Other/Comments
BIRDS						
black-shouldered kite			X	O	E	A California Fully Protected Species.
Northern harrier	Priority 2	X		O	O	Declining in Southern California because of loss of existing open country (grassland, marshes, and coastal scrub) (Remsen 1978); occurs fairly regularly in small numbers on South VAFB.
Cooper's hawk	Priority 3	X		O	E	Frequents variety of open and semi-open habitats during migration and in the winter; has declined due to loss of suitable riparian woodland nesting habitat.
Merlin	Priority 1	X		O	E	Rare transient and winter visitor to the study region; prefers open country for foraging; recorded from both north and south of the project area (Lehman 1982).
prairie falcon	Priority 3			O	O	Winters in small numbers along the coast of Santa Barbara County; prefers open country for foraging; has been recorded in the project area.

(1) See Remsen (1978) for a description of priorities for birds and Williams (1986) for mammals.
(2) National Audubon Society (Tate 1986).
(3) These are species which have been found by local biologists to be rare or declining in Santa Barbara County.
(4) O = Observed
E = Expected
P = Possible
U = Unlikely

TABLE B.5
(continued)

SPECIES	Species of[1] Special Concern	Blue[2] List	Regionally[3] Rare and Declining	STATUS[4] Study Region	STATUS[4] Project Area	Other/Comments
BIRDS (Continued)						
burrowing owl	Priority 2	X		O	O	Numbers are down due to loss of short grassland habitat; uncommon winter visitor to open grasslands along the coast; has been observed in the project area near the Boathouse Flats Site.
long-eared owl	Priority 2			P	U	Still nests along the Santa Ynez River west of Buellton and may nest at Barka Slough; very rare transient and winter visitor in coastal areas of Santa Barbara County (Lehman 1982).
short-eared owl	Priority 2	X		P	P	Formerly wintered regularly along the coast in undisturbed open country (grasslands and marshes); rare transient and winter visitor to grasslands and marshes in the study region.
willow flycatcher	Priority 1	X		P	P	The only breeding locale in Santa Barbara County occurs along the Santa Ynez River west of Buellton; has been extirpated as a breeder elsewhere in Santa Barbara County; casual migrant to riparian habitats adjacent to the project area.
purple Martin		X	X	P	P	Nearest breeding population found at Nojoqui Falls County Park east of the study region; may occur as a rare transient to the project site during migration.
tree swallow			X	O	E	Frequents willow riparian habitats for breeding and is known to still nest along the Santa Ynez River and on San Antonio Creek; major reductions have occurred in Southern California breeding populations.

TABLE B.5
(continued)

SPECIES	Species of Special Concern[1]	Blue List[2]	Regionally Rare and Declining[3]	STATUS[4] Study Region	STATUS[4] Project Area	Other/Comments
BIRDS (Continued)						
Swainson's thrush			X	O	E	Major reductions have occurred in Southern California breeding populations; fairly common summer breeder and migrant in well developed riparian woodlands in northern Santa Barbara County (Lehman 1982).
warbling vireo			X	O	O	Fairly common summer breeder in riparian habitats along the North Coast of Santa Barbara County; extirpated as a breeder from most of coastal Southern California.
yellow warbler		X	X	O	E	Common migrant and uncommon localized summer resident in riparian habitats along the North Coast of Santa Barbara County.
Wilson's warbler		X		O	O	Extirpated as a breeder along the South Coast; uncommon breeder in lowland riparian habitats along the North Coast; nesting in Red Roof Canyon adjacent to SLC-6.
yellow-breasted chat	Priority 2		X	O	E	Has declined throughout Southern California; uncommon migrant and summer breeder in better developed riparian habitats on VAFB.
blue grosbeak		X	O	P		Has declined as a breeder in coastal areas of Southern California due to loss of riparian edge habitat; a few pairs breed at Barka Slough and along the Santa Ynez River east of Lompoc.

TABLE B.5
(continued)

SPECIES	Species of[1] Special Concern	Blue[2] List	Regionally[3] Rare and Declining	STATUS[4] Study Region	STATUS[4] Project Area	Other/Comments
BIRDS (Continued)						
grasshopper sparrow		X	X	O	E	Very localized breeder in Santa Barbara County; nests in undisturbed grassland; known to still nest at Point Sal and in small numbers at Barka Slough in San Miguelito Canyon and adjacent to the mouth of the Santa Ynez River (Lehman 1982; Howald et al. 1985).
MAMMALS						
badger	Priority 3		X	O	O	Still common in undeveloped grassland and open coastal scrub habitats in northern Santa Barbara County; has declined throughout much of California due to habitat loss, rodent poisoning, and trapping (Williams 1986).
mountain lion			X	O	E	California Protected non-game mammal; uncommon in more remote areas of Santa Barbara County; the species has been trapped recently in San Miguelito Canyon. Northeast of the project area and has been observed occasionally on South VAFB and on the Bixby and Hollister Ranches (A. Mills, pers. comm. 1988).

TABLE B.6

CALIFORNIA LEAST TERN BREEDING COLONY SIZE AND FLEDGLING SUCCESS FOR CENTRAL CALIFORNIA 1980-1987

LOCALITY	1980		1981		1982		1983		1984		1985		1986		1987	
	N[1]	F[2]	N	F	N	F	N	F	N	F	N	F	N	F	N	F
SAN LUIS OBISPO COUNTY																
Pismo Beach	--	--	--	--	3	5	?	?	0	0	--	--	--	--	--	--
Oso Flaco Lake	6-8	0-6	0	0	1-2	0	1	0	0	0	--	--	--	--	--	--
SANTA BARBARA COUNTY																
Guadalupe Dunes	15-18	15	25	5-10	12	3	7	3	8-12	2	10-12	9-11	12-14	?	20-25	34-37
San Antonio Cr.	2	0	4	4	6	2	14	10	15-19	1	13-15	4-5	3	0	2	0
Purisima Point	25-30	18-22	30	12	15-20	1	14	9	17-22	1	15-20	2-3	0	0	14	0
Santa Ynez River Mouth	--	--	--	--	--	--	8	4	0	0	0	0	8-10	0	4	6
VENTURA COUNTY																
Santa Clara River	13-15	13	20-25	25	17-20	16	3	2	6-9	6	12	6-7	14	15	10-15	10
Ormond Beach	6?	0	0	0	7	0	4	2	--	--	4-6	0	?	--	0	0
Point Mugu	10-12	1	12	0	12-14	0	22	15	15-20	5	60	60-80	49	40	20	3
TOTAL FOR TRICOUNTIES	119-141	47-57	145-150	46-51	73-84	27	73	45	61-82	15	114-125	81-106	86-90	55	70-80	53-56

(1) N = estimated number of breeding pairs

(2) F = estimated minimum number of fledglings

Sources: Collins, C. T. 1986, 1988; Howald et al. 1985; Goldwasser 1980; and Webster 1981.

KEY TO SPECIES TABLES B.7, B.8, AND B.9

NOMENCLATURE: Nomenclature follows Jennings (1987) and Collins et al. (1982) for amphibians and reptiles, Jones et al. (1986) for land mammals, and the "Thirty-Fourth Supplement to the American Ornithologists' Union Check-list of North American Birds" (AOU 1982) and Banks et al. (1987) for birds.

HABITAT ABBREVIATIONS[1]

MARINE

- OS = Offshore (oceanic)
- SBC = Santa Barbara Channel
- NS = Near Shore
- CS = Coastal Strand (sandy beach)
- RS = Rocky Shoreline (sea cliffs, ledges, shelves, rocky intertidal and off-lying rocks and islets)

TERRESTRIAL

- CI = Channel Islands (Northern Channel Islands only)
- CBS = Southern Coastal Bluff Scrub and Central Dune Scrub
- CSS = Venturan Coastal Sage Scrub and Central Coastal Scrub
- C = Chaparral (northern mixed, central maritime, and blue brush)
- G = Grassland (non-native and native perennial)
- RW = Riparian Woodland (central coast arroyo willow and central coast riparian scrub)
- AGR = Modified Habitats (planted eucalyptus and Monterey cypress windrows)

RELATIVE ABUNDANCE DESIGNATIONS[2]

- A = Abundant. The species is nearly always encountered in the particular habitat type indicated, generally in moderate to large numbers.
- C = Common. The species can usually be found in the designated habitat during the appropriate season, but is usually not in large numbers (five or more individuals/day).
- U = Uncommon. The species occurs in small numbers (one to four individuals/day) and is not always observed in the given habitat.
- R = Rare. The species may occur within the designated habitat but only in very small numbers (one to five sightings/season). Occurrence is irregular, seasonal, or unlikely.
- Ca = Casual. Within the range of the species, but not of regular occurrence. Generally fewer than five sightings from the study region adjacent to the project sites.

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[1]Terrestrial habitat types follow Holland (1986)

[2]The following abundance ratings apply only to the occurrence of a species within the project area and do not represent their general abundance within similar habitats in other areas of Santa Barbara County. These abundance designations are somewhat subjective, but are helpful in determining the relative value or significance of a given habitat with respect to a certain species.

KEY TO SPECIES TABLES B.7, B.8, AND B.9
(Continued)

SEASONAL STATUS (Pertains to birds only)

- SP = Spring Migrant (March 1 to May 31). The species occurs within a given habitat type as a spring migrant.
- SU = Summer Resident (June 1 to July 31). The species occurs only as a spring-summer breeder but migrates out of the region for the winter months.
- WI = Winter Visitor (December 1 to February 28). The species occurs only as a winter visitor and is not known to breed in the study region.
- AU = Fall Migrant (August 1 to November 30). The species occurs within the given habitat types as a fall migrant.
- * = Known Breeding. The species nests within the project area.
- ? = Breeding Status Uncertain. The species may nest within the project area since suitable habitat exists. However, no definite evidence of nesting has yet been found.

TABLE B.7

AMPHIBIANS AND REPTILES OBSERVED OR EXPECTED TO OCCUR WITHIN THE STUDY REGION AND PROJECT AREA

SCIENTIFIC/COMMON NAME	RELATIVE ABUNDANCE AND HABITAT AFFINITIES[1] CI	CBS	CSS	C	G	RW
CAUDATA (Salamanders)						
Aneides lugubris arboreal salamander				R	C	
Batrachoseps nigriventris blackbelly slender salamander		R	R	R	C	
Batrachoseps pacificus Pacific slender salamander	C					
Ensatina eschscholtzii ensatina			C	R	U	C
ANURA (Frogs and Toads)						
Bufo boreas Western toad			U	U	U	C
Pseudacris (=Hyla) regilla Pacific treefrog	C		U	U	C	A
Rana aurora draytoni California red-legged frog						R
TESTUDINES (Turtles)						
Clemmys marmorata pallida Western pond turtle						U
SAURIA (Lizards)						
Anniella pulchra California legless lizard		C	U	U	U	C
Eumeces skiltonianus Western skink		R	U	U	C	U

[1]See Key to Species Tables B.7, B.8, and B.9 for definitions of abbreviations.

TABLE B.7
(continued)

SCIENTIFIC/COMMON NAME	RELATIVE ABUNDANCE AND HABITAT AFFINITIES					
	CI	CBS	CSS	C	G	RW
SAURIA (Lizards) (Continued)						
Elgaria multicarinatus Southern alligator lizard	C	U	U	U	A	C
Phrynosoma coronatum coast horned lizard			U	C	U	R
Sceloporus occidentalis Western fence lizard	C	C	A	A	A	C
Uta stansburiana side-blotched lizard	U	U	C	C	U	C
SERPENTES (Snakes)						
Coluber mormon Western yellow-bellied racer	U		U	U	U	
Crotalus viridis Western rattlesnake		U	C	C	U	C
Diadophis punctatus ringneck snake			U	U	C	C
Hypsiglena torquata spotted nightsnake	R		R	R	Ca	R
Lampropeltis getulus common kingsnake		R	C	C	C	R
Masticophis lateralis striped racer		U	C	C	U	U
Nerodia (=Thamnophis) hammondii two-striped garter snake						U
Nerodia elegans Western terrestrial garter snake			C	C	U	C
Nerodia sirtalis common garter snake			R	R	R	C
Pituophis melanoleucus gopher snake	U	C	C	C	A	C

TABLE B.8

LAND MAMMALS OBSERVED OR EXPECTED TO OCCUR WITHIN THE STUDY REGION AND PROJECT AREA

SCIENTIFIC/COMMON NAME	RELATIVE ABUNDANCE AND HABITAT AFFINITIES[1] CI	CBS	CSS	C	G	RW
MARSUPIALIA (Marsupials)						
Didelphis virginiana Virginia opossum		U	C	U	C	C
INSECTIVORA (Shrews and Moles)						
Sorex ornatus ornate shrew		R	C	U	R	C
Sorex trowbridgii Towbridge's shrew		R	C	C		C
Scapanus latimanus broad-footed mole		U	C	C	A	C
CHIROPTERA (Bats)						
Myotis californicus California myotis *Myotis yumanensis* Yuma myotis *Pipistrellus hesperus* Western pipistrelle *Eptesicus fuscus* big brown bat *Lasiurus cinereus* hoary bat *Plecotus townsendi* Townsend's big-eared bat	Regional status and distribution of bats is poorly understood. Virtually nothing is known about their distribution and status on VAFB. Bats tend to be wide-ranging and show very weak habitat affinities. The species listed here are those which occur more commonly on the coastal plain and in foothill canyons of Santa Barbara County. Any or all of these species can be expected to occur within the project area.					

[1]See Key to Species Tables B.7, B.8, and B.9 for definitions of abbreviations.

TABLE B.8
(continued)

SCIENTIFIC/COMMON NAME	RELATIVE ABUNDANCE AND HABITAT AFFINITIES					
	CI	CBS	CSS	C	G	RW
CHIROPTERA (Bats) (Continued)						
Antrozous pallidus pallid bat						
Tadarida brasiliensis Brazilian free-tailed bat						
LAGOMORPHA (Lagomorphs)						
Sylvilagus audubonii desert cottontail		C	A	C	U	C
Sylvilagus bachmani brush rabbit			R	C		C
Lepus californicus black-tailed jackrabbit		U	U		C	
RODENTIA (Rodents)						
SCIURIDAE (Squirrels)						
Tamias merriami Merriam's chipmunk			R	R		
Spermophilus beecheyi California ground squirrel		A	C	U	A	R
Sciurus griseus Western gray squirrel						R
GEOMYIDAE (Gophers)						
Thomomys bottae Botta's pocket gopher		U	A	C	A	C

TABLE B.8
(continued)

SCIENTIFIC/COMMON NAME	CI	CBS	CSS	C	G	RW
			RELATIVE ABUNDANCE AND HABITAT AFFINITIES			
HETEROMYIDAE (Kangaroo Rats)						
Perognathus californicus California pocket mouse			C	C	R	R
Dipodomys agilis fuscus agile kanagroo rat		R	C	C	C	
Dipodomys heermanni arenae Hermann's kangaroo rat			C		C	
CRICETIDAE (Mice and Rats)						
Reithrodontomys megalotis Western harvest mouse	R	R	U	R	A	U
Peromyscus californicus California mouse			C	C		C
Peromyscus boylii brush mouse			R	R		U
Peromyscus maniculatus deer mouse	A	C	A	C	R	C
Peromyscus truei pinyon mouse			C	A		R
Neotoma lepida desert woodrat		U	C	C		
Neotoma fuscipes dusky-footed woodrat			C	C		A
Microtus californicus California vole		U	C	U	A	U

TABLE B.8
(continued)

SCIENTIFIC/COMMON NAME	RELATIVE ABUNDANCE AND HABITAT AFFINITIES					
	CI	CBS	CSS	C	G	RW
CANIDAE (Canids)						
Canis latrans coyote		C	C	C	C	C
Urocyon cinereoargenteus gray fox			U	C		R
Urocyon littoralis Channel Islands gray fox	A					
PROCYONIDAE (Raccoons)						
Procyon lotor raccoon		U	C	C	U	C
MUSTELIDAE (Weasels, Skunks)						
Mustela frenata long-tailed weasel		U	C	C	A	C
Taxidea taxus badger			U	U	C	
Spilogale gracilis Western spotted skunk	U		C	C	U	C
Mephitis mephitis striped skunk		U	C	C	U	C
FELIDAE (Cats)						
Felis concolor mountain lion			R	U	R	R
Felis rufus bobcat		U	C	C	U	C
ARTIODACTYLA (Hoofed Mammals)						

TABLE B.8
(continued)

SCIENTIFIC/COMMON NAME	RELATIVE ABUNDANCE AND HABITAT AFFINITIES					
	CI	CBS	CSS	C	G	RW
SUIDAE (Pigs)						
Sus scrofa wild pig					U	C
CERVIDAE (Deer)						
Odocoileus hemionus mule deer	U	U	C	C	C	C

TABLE B.9

BIRDS OBSERVED OR EXPECTED TO OCCUR WITHIN THE STUDY REGION AND PROJECT AREA

	RELATIVE ABUNDANCE & HABITAT AFFINITY														
	SEASONAL STATUS[1]				MARINE					TERRESTRIAL					
SPECIES	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
Gavidae															
Arctic loon	A		C	C		C	A								
common loon	C	Ca	U	C		C	C								
red-throated loon	C	Ca	U	C		C	C								
Podicipedidae															
eared grebe	C	Ca	C	A		C	C								
horned grebe	U		U	C		C	C								
Western grebe	C	U	C	C		C	C								
Procellariidae															
black-footed albatross	R	R	Ca	Ca	R	Ca									
Laysan albatross	Ca			Ca	Ca										
Northern fulmar	R	Ca	C	C	C	U									
Buller's shearwater			R		R	Ca									
flesh-footed shearwater	R		R		R	Ca									
pink-footed shearwater	U	C	U		C	U	Ca								
sooty shearwater	A	A	C	U	A	A	A								
black-vented shearwater			C	C		C	C								
short-tailed shearwater			R	R	R	R									U
fork-tailed storm-petrel	Ca			R	R	R	Ca								
ashy storm-petrel	R	C	R	Ca	U	C	U								
Leach's storm-petrel	R	U	U	Ca	U	Ca									
black storm-petrel	U	C	U	Ca		C	U								
least storm-petrel		U	R			R	R								
Phaethontidae															
red-billed tropicbird		Ca	Ca			Ca	Ca								
Pelecanidae															
brown pelican	C	U	C	A		C	C	U	U						

[1]See Key to Species Tables B.7, B.8, and B.9 for definitions of abbreviations.

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS[1]				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
Phalacrocoracidae															
double-crested cormorant	C	U	C	C		U	C		C						
pelagic cormorant	C	C*	C	C		C	C		C						
Brandt's cormorant	U	R	U	U		C	C		U						
Fregatidae															
magnificent frigatebird		Ca					Ca	Ca	Ca						
Ardeidae															
great blue heron	C	C?	C	C				U	C	U			U		
cattle egret	R		R	R								U	R		
green-backed heron	U	U	U	U					U			U			
great egret	U	R	U	U				R	U						
snowy egret	C	U	C	C				U	C						
black-crowned night heron	U	U							R					R	
Threskiornithidae															
white-faced ibis			Ca				Ca		Ca						
Anatidae															
lesser scaup	C	Ca	C	C		C	C								
greater scaup	R	Ca	R	R		R	R								
brant	C	R	U	R		C	C		R						
white-winged scoter	C	Ca	U	U		U	U								
black scoter		Ca	Ca			Ca	Ca								
surf scoter	C	U	C	C		C	C								
red-breasted merganser	U	U	C	C		U	C								
Cathartidae															
turkey vulture	C	C?	C	C				R	R	U	U	U	C	U	
Accipitridae															
osprey			R				Ca	Ca	Ca						Ca
black-shouldered kite	C	C?	C	C				U					C	U	U
Northern harrier	C	C*	C	C				C				U	C	C	
sharp-shinned hawk	U		U	U							U	R	U	U	U
Cooper's hawk	U	U?	U	U							U	R	U	U	U
golden eagle		Ca	Ca	Ca							Ca	Ca	Ca		
red-shouldered hawk	C	C?	C	C							C	U	U	C	U

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS(1)				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
red-tailed hawk	A	A*	A	A							C	C	A	U	C
rough-legged hawk			R	Ca							U	R	U		R
ferruginous hawk				R									R		R
bald eagle				Ca			Ca	Ca	Ca						Ca
Falconidae															
Merlin	R		R	R				R	R		R		R	R	R
prairie falcon	R		R	R					R	R			R		R
American kestrel	C	C*	C	C						U	C	R	C	U	U
peregrine falcon			Ca	Ca				Ca	Ca	Ca			Ca		
Phasianidae															
California quail	A	A*	A	A							A	A	U		C
Charadriidae															
killdeer	C	C*	C	C				R	U					U	
snowy plover	C	C*	C	C				C							
mountain plover	Ca			R										Ca	
semipalmated plover	C	C	C	C				U	R						
lesser golden-plover		Ca	R					R						Ca	
black-bellied plover	C	U	C	C				U	C					R	
Haematopodidae															
black oystercatcher	U	U*	U	U					U						
Scolopacidae															
willet	C	C	C	C				C	C						
wandering tattler	U	R	U	U					U						
spotted sandpiper	C	U*	C	C					U						
whimbrel	C	U	C	U				C	U						
long-billed curlew	C	C	C	C				C	U					C	
marbled godwit	C	U	C	C				C	U						
ruddy turnstone	U	R	U	R				R	U						
back turnstone	C	R	C	C				R	C						
surfbird	U	R	U	U					U						
red knot	R	R	R					Ca	Ca						
sanderling	C	U	C	A				A	C						
Western sandpiper	C	C	C	C				U	R						

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS[1]				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
least sandpiper	C	C	C	C				U	U						
Baird's sandpiper			Ca	R				Ca	Ca						
pectoral sandpiper			R						Ca						
long-billed dowitcher	C	C	C	C				U	C						
short-billed dowitcher	C	C	C	R				U	U						
red phalarope	R		U	R	U	U	R								
red-necked phalarope	U	U	C		U	C	R								
Laridae															
pomarine jaeger	R		U	U	U	Ca									
parasitic jaeger	R	Ca	R	U	U	U	R	R							
long-tailed jaeger	Ca		R		R	Ca									
South Polar skua		U	R		U										
Bonaparte's gull	C	R	U	U		C	C	C	U						
Heermann's gull	U	C	C	C		C	C	C	U						
mew gull	C		U	C		U	C	U	U						
ring-billed gull	C	C	C	C		C	C	U	C						
California gull	A	C	A	A		C	C	U	C						
herring gull	U		U	U		U	U	U	U						
Thayer's gull	U		U	U		U	U	U	U						
Western gull	A	C*	A	A	R	A	A	C	C						
glaucous-winged gull	C	R	C	C		U	C	C	C						
black-legged kittiwake	R		R	U	U	U	R								
Sabine's gull	C	Ca	U		C	R									
Caspian tern	U	U	U	Ca		R	U	U	U						
royal tern	R	R	U	U		U	U	U	U						
elegant tern	U	C	C			U	C	C	C						
common tern	U	R	U			U	U	U	U						
Arctic tern	Ca		C		C	R									
Forster's tern	U	U	U	U		U	U	U	U						
least tern	C	C*	C				U	U	C						
black tern			Ca			Ca	Ca	Ca	Ca						
black skimmer			Ca	Ca			Ca	Ca	Ca						

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS[1]				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
Alcidae															
common murre	U	R	U	A		C	C	U	R						
pigeon guillemot	U	A*				C	A		A						
Xantus' murrelet		C*				C	C		C						
ancient murrelet				U		R	U		R						
Cassin's auklet	U	A*	U	C	U	C	C		C						
rhinoceros auklet	U	U*	U	C	U	C	C		U						
tufted puffin	R				R	R									
horned puffin	U				R	R									
Columbidae															
band-tailed pigeon	R	Ca	R	R										R	
rock dove	C	C*	C	C					U				U		U
mourning dove	C	C*	C	C							U	U	C	C	C
Cuculidae															
yellow-billed cuckoo		Ca												Ca	
greater roadrunner	U	U*	U	U							U	R	U	U	
Tytonidae															
common barn-owl	U	U*	U	U						U	U	R	U	U	U
Strigidae															
great Horned owl	C	C*	C	C						U	C	U	C	C	C
burrowing owl	R	R?	R	R									R		
long-eared owl		Ca												Ca	Ca
short-eared owl			R	R									R		
Caprimulgidae															
common poorwill	U	U*	U	U							R	U			
Apodidae															
white-throated swift	U	U*	U	U						U	U	U	U		
Vaux's swift	U		U							U	U	U	U		
Trochilidae															
black-chinned hummingbird	U	U*	R											U	R
Anna's hummingbird	C	C*	C							R	U	C	U	C	C
Costa's hummingbird	C	C*	U							U	C	C	U	R	R

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS[1]				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
rufous hummingbird	U		U											U	U
Allen's hummingbird	C	C*	U								U	U	R	C	C
Alcedinidae															
belted kingfisher	U	U*	U	U					U					R	
Picidae															
acorn woodpecker	C	C*	C	C										U	R
red-breased sapsucker	R		U	U										U	R
Nuttall's woodpecker	C	C*	C	C							U	U		C	U
downy woodpecker	C	C*	C	C										C	U
hairy woodpecker	U	U*	U	U										U	R
Northern flicker	C	U*	C	C							U	U	U	C	U
Tyrannidae															
Western wood-pewee	U	R?	U											U	R
willow flycatcher	R		U											R	Ca
Hammond's Flycatcher	R													R	Ca
Western flycatcher	C	C*	C											C	U
black phoebe	C	C*	C	C							R	R	U	C	U
Say's phoebe	C	R?	C	C						R	C	U	A	U	U
ash-throated flycatcher	U	U?	U								U	U	U	C	U
Cassin's kingbird	U	U?	U	R							R	R	U	R	U
Western kingbird	U	R?	U								R	R	U	U	U
Alaudidae															
horned lark	U	U*	C	C				U		R	U		C		
Hirundinidae															
tree swallow	C	C*	C	U							R		R	U	
violet-green swallow	C	C*	C	R							R	U	R	C	
no. rough-winged swallow	U	U*	U						R	R	R		R	U	
cliff swallow	C	C*	C					U	U	U	C	U	C	C	C
barn swallow	U	U*	U					U	U	U	R	R	U	U	U
Corvidae															
scrub jay	A	A*	A	A							U	U	R	U	
American crow	C	C*	C	C						U	U	U	C	C	U

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS(1)				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
Paridae															
plain titmouse	C	C*	C	C						U	C			U	U
Aegithalidae															
bushtit	A	A*	A	A						C	C			A	U
Sittidae															
red-breasted nuthatch	Ca		R	R										R	R
white-breasted nuthatch	U	U*	U	U										R	R
Certhiidae															
brown creeper	Ca		R	R										R	R
Troglodytidae															
rock wren	R	R*	R	R					R		R	R			
Bewick's wren	C	C*	C	C							C	A		C	U
house wren	U	U*	U	R								R		U	R
winter wren			R	R										Ca	
marsh wren	C	U?	C	C										R	
Muscicapidae															
golden-crowned kinglet	Ca		R	R										R	R
ruby-crowned kinglet	C		C	C							R	U		C	C
blue-gray gnatcatcher	U	R?	U								R	R	U	U	R
Swainson's thrush	C	C?	U									R		U	
hermit thrush	C		C	C							U	U		C	
varied thrush			R	R										R	
mountain bluebird			R	R									R		
Western bluebird	U	U?	U	U								R		U	R
American robin	C	U?	C	C							U	U		C	U
wrentit	A	A*	A	A							C	A		U	
Mimidae															
Northern mockingbird	U	U*	U	U										R	Ca
California thrasher	A	A*	A	A							A	A		U	
Motacillidae															
water pipit	U		C	C					U	U			U		
Bombycillidae															
cedar waxwing	U		U	U								U		U	U

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS[1]				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
Ptilogonatidae															
phainopepla	R	R?	R									R		R	Ca
Laniidae															
loggerhead shrike	C	U*	C	C							C	U	C	U	C
Sturnidae															
Eurasian starling	A	A*	A	A						C	C	U	A	C	A
Vireonidae															
Bell's vireo	Ca		Ca											Ca	
solitary vireo	R		R											R	R
Hutton's vireo	C	C*	C	C										C	U
warbling vireo	C	C?	C											C	U
Emberizidae															
Tennessee warbler			Ca											Ca	Ca
orange-crowned warbler	C	U*	C	C							R	R		C	C
yellow warbler	C	C*	C											C	U
yellow-rumped warbler	C		A	A				U	U	U	U	U		C	C
black-throated gray warb.	U		U	Ca										U	U
Townsend's warbler	C		C	U										U	U
hermit warbler	R		R	Ca										R	R
MacGillivray's warbler	R		U											R	R
common yellowthroat	C	C*	C	C							U	R	U	C	R
Wilson's warbler	C	C*	C	R							R			C	R
yellow-breasted chat	U	U?	U											U	
Western tanager	C		U											C	U
black-headed grosbeak	C	C*	U											U	R
blue grosbeak	U	U?	U											U	R
lazuli bunting	U	U*	U									U		U	R
rufous-sided towhee	C	C*	C	C							C	C		C	
brown towhee	C	C*	C	C							C	C		C	
chipping sparrow	R			R									R	R	
vesper sparrow	R		R										R		
lark sparrow	C	U*	C	C									C	U	U
sage sparrow	R	R	R	R									R		

TABLE B.9
(continued)

SPECIES	SEASONAL STATUS[1]				RELATIVE ABUNDANCE & HABITAT AFFINITY										
					MARINE					TERRESTRIAL					
	SP	SU	AU	WI	OS	SBC	NS	CS	RS	CBS	CSS	C	G	RW	AGR
savannah sparrow	C	C*	C	C						U	U		C	R	U
grasshopper sparrow	U	U*	R										U		
fox sparrow	U		U	U								U		U	
song sparrow	C	C*	C	C							U	U	R	C	R
Lincoln's sparrow	C		C	C							U	U	R	C	R
golden-crowned sparrow	C		C	A							C	C	U	C	
white-crowned sparrow	A	A*	A	A							A	A	C	C	C
dark-eyed junco	C	U?	C	C							U	U		U	U
red-winged blackbird	C	C*	C	C							U		C	C	C
tricolored blackbird	U	U*	U	U									R	U	U
Western meadowlark	C	C*	C	C							U		A		C
Brewer's blackbird	C	C*	C	C							C	U	C	C	C
brown-headed cowbird	C	C*	C	C									U	C	R
hooded oriole	R	R?	R											R	R
Northern oriole	U	U?	U											U	U
Fringillidae															
purple finch	U	U	U	U								R		C	U
house finch	A	C*	A	A						U	C	C	C	C	A
pine siskin	R		R	R										R	R
lesser goldfinch	C	C*	C	C							C	C	C	C	C
Lawrence's goldfinch	U	R	R	R								R		U	R
American goldfinch	C	C*	C	C							U	U	C	C	C
Passeridae															
house sparrow	C	C*	C	C											C

TABLE B.10

MARINE MAMMALS OF COASTAL CALIFORNIA OFFSHORE OF POINT ARGUELLO INCLUDING THE NORTHERN CHANNEL ISLANDS

MUSTELIDAE:	
Enhydra lutris	Southern sea otter
PINNIPEDIA:	
OTARIDAE	
Arctocephalus townsendi	Guadalupe fur seal
Callorhinus ursinus	Northern fur seal
Eumetopias jubatus	Steller (northern) sea lion
Zalophus californianus californianus	California sea lion
PHOCIDAE	
Mirounga angustirostris	Northern elephant seal
Phoca vitulina richardsi	harbor seal
CETACEA:	
MYSTICETI	
Eubalaena glacialis japonica	North Pacific right whale
Eschrichtius robustus	gray whale
Balaenoptera musculus	blue whale
B. physalus	fin whale
B. borealis	sei whale
B. edeni	Bryde's whale
B. acutorostrata	minke whale
Megaptera novaeangliae	humpback whale
ODONTOCETI	
Physeter catodon	sperm whale
Kogia breviceps	pygmy sperm whale
K. simus	dwarf sperm whale
Mesoplodon carlhubbsi	Carl Hubb's beaked whale
M. densirostris	Blainville's beaked whale
M. stejnegeri	Stejneger's beaked whale
Ziphius cavirostris	goose-beaked whale
Berardius bairdii	Baird's beaked whale
Globicephala macrorhynchus	short-finned pilot whale
Grampus griseus	Risso's dolphin
Orcinus orca	killer whale
Pseudorca crassidens	false killer whale
Delphinus delphis	common dolphin: Northern and Baja neritic forms
Lagenorhynchus obliquidens	Pacific white-sided dolphin
Lissodelphis borealis	Northern right-whale dolphin
Stenella coeruleoalba	striped dolphin
S. attenuatta?	spotted dolphin
Steno bredanensis	rough-toothed dolphin
Tursiops truncatus	bottlenose dolphin: coastal form
Phocoenoides dalli	Dall's porpoise
Phocoena phocoena	harbor porpoise

Source: Woodhouse 1988.

TABLE B.11

SPECIALLY PROTECTED MARINE SPECIES

SPECIES	FEDERAL STATUS	CALIFORNIA STATE STATUS
REPTILES		
Deremochelys coriacea leather-back sea turtle	Endangered	None
Caretta caretta loggerhead sea turtle	Threatened	None
Chelonia mydas green sea turtle	Threatened	None
Lepidochelys olivacea Pacific Ridley sea turtle	Threatened	None
MAMMALS		
Eubalaena glacialis japonica Pacific right whale	Endangered	None
Eschrichtius robustus gray whale	Endangered	None
Balaenoptera musculus blue whale	Endangered	None
Balaenoptera physalus fin whale	Endangered	None
Balaenoptera borealis sei whale	Endangered	None
Megaptera novaeangliae humpback whale	Endangered	None
Physeter catodon sperm whale	Endangered	None
Arctocephalus townsendi Guadalupe fur seal	Threatened	Rare, Protected
Enhydra lutris California sea otter	Threatened	Protected

Source: Woodhouse 1985.

TABLE B.12

MARINE MAMMALS ASSOCIATED WITH THE WATERS WITHIN A FIVE NAUTICAL MILE RADIUS OF POINT ARGUELLO

MARINE MAMMALS EXPECTED IN THE VICINITY OF THE PROJECT SITE

Enhydra lutris	Southern sea otter	*Eschrichtius robustus*	California gray whale
Phoca vitulina richardsi	harbor seal	*Balaenoptera musculus*	blue whale
Mirounga angustirostris	Northern elephant seal	*B. physalus*	fin whale
Zalophus californianus	California sea lion	*B. acutorostrata*	minke whale
Callorhinus ursinus	Northern fur seal	*Megaptera novaeangliae*	humpback whale
Lagenorhynchus obliquidens	Pacific white-sided dolphin	*Phcoenoides dalli*	Dall's porpoise
Tursiops truncatus	Pacific bottle-nose dolphin (coastal form)	*Phocoena phocoena*	harbor porpoise

MARINE MAMMALS THAT COULD OCCUR IN VICINITY OF THE PROJECT SITE

Eumetopias jubatus	Steller sea lion	*Physeter catodon*	sperm whale
Arctocephalus townsendi	Guadalupe fur seal	*Kogia breviceps*	pygmy sperm whale
Eubalaena glacialis	North Pacific right whale	*K. simus*	dwarf sperm whale
B. borealis	sei whale	*Mesoplodon spp*	mesoplodonts
Delphinus delphis	common dolphin	*Berardius bairdii*	Baird's beaked whale
Lissodelphis borealis	Northern right whale dolphin	*Ziphius cavirostris*	Cuvier's beaked whale

Source: Woodhouse 1988.

TABLE B.13

COMPARISON OF DOCUMENTED CALIFORNIA SEA OTTER PREY ITEMS AND MACROINVERTEBRATES INVENTORIED FROM THE POINT ARGUELLO BOATHOUSE AREA

TAXON	INVENTORIED FROM BOATHOUSE AREA HARD OR SOFT BOTTOM COMMUNITIES
Echiurida	
Urechis caupo (fat innkeeper worm)	
Annelida	
Polychaeta	
Eudistyla polymorpha (sabellid worm)	X
Nereis vexillosa (clam worm)	
Arthropoda	
Crustacea	
Cirripedia	
Thoracica	
Balanus nubilis (barnacle)	
Malacostraca	
Decapoda	
Blepharipoda occidentalis (spiny sand crab)	X
Cancer antennarius (rock crab)	X
C. magister (Dungeness crab)	
C. productus (red rock crab)	X
Cryptolithoides sitchensis (umbrella crab)	
Hapalogaster cavicauda (furry crab)	
Lopholithodes foraminatus (stone crab)	
Loxorhynchus crispatus (masking crab)	
Panulirus interruptus (spiny lobster)	X
Pleuroncodes planipes (pelagic red or tuna crab)	
Pugettia producta (kelp crab)	
P. richii (kelp crab)	

Sources: California Department of Fish and Game 1976; Woodhouse et al. 1977; Chambers Consultants 1980; Kvitek and Oliver 1988.

TABLE B.13
(continued)

TAXON	INVENTORIED FROM BOATHOUSE AREA HARD OR SOFT BOTTOM COMMUNITIES
Mollusca	
Gastropoda	
Astrea gibberosa (brick-red top snail)	
Crepidula adunca (hooked slipper shell)	
Haliotis cracherodii (black abalone)	
H. rufescens (red abalone)	X
Lottia gigantea (owl limpet)	
Megathura crenulata (giant keyhole limpet)	
Polinices lewisii (giant moon snail)	
Tegula brunnea (brown turban snail)	X
T. montereyi (turban snail)	
Bivalvia	
Clinocardium facanum (cockle)	
Modiolus (Volsella) modiolus (giant horse mussel)	X
Mytilus californianus (California sea mussel)	
M. edulis (bay mussel)	
Pododesmus cepio (rock oyster)	
Protothaca sp. (littleneck clam)	
Bivalvia	
Saxidomus nuttalli (Washington or butter clam)	
Siliqua patula (northern razor clam)	
Spisula hempelli	
Tivela stultorum (Pismo clam)	
Tresus nuttallii (gaper clam)	
Amphineura	
Polyplacophora	
Cryptochiton stelleri (gumboot chiton)	
Ischnochiton sp. (chiton)	
Cephalopoda	
Loligo opalescens (squid)	
Octopus sp. (octopus)	X

TABLE B.13
(continued)

TAXON	INVENTORIED FROM BOATHOUSE AREA HARD OR SOFT BOTTOM COMMUNITIES
Echinodermata	
Echinoidea	
Strongylocentrotus franciscanus (red sea urchin)	X
S. purpuratus (purple sea urchin)	X
Asteroidea	
Patiria miniata (bat star)	X
Pisaster brevispinus (short-spined sea star)	X
P. giganteus (sea star)	X
P. ochraceus (common sea star)	X
Pycnopodia helianthoides (sunflower star)	
Chordata	
Ascidiacea	
Styela montereyensis (stalked tunicate)	X
Pisces	
Scorpaeniformes	
Cottidae	
Sculpins	
Hexagrammidae	
Hexagrammos sp. (greenling)	
Perciformes	
Surfperches	
Tetraodontiformes	
Molidae	
Mola mola (ocean sunfish)	

TABLE B.14

MARINE TURTLE RECORDS OF THE SANTA BARBARA MUSEUM OF NATURAL HISTORY

SPECIES	DATE	LOCATION
Leatherback	July 1977	Ventura River Mouth, Ventura County
Leatherback	Fall 1980	Atascadero State Beach, San Luis Obispo County
Leatherback	July 1983	Emma Wood State Beach, Ventura County
Leatherback	June 1985	Two miles off Naples, Santa Barbara County
Leatherback	August 1985	Morro Bay Sand Spit, San Luis Obispo County
Leatherback	November 1985	Big Sur, Monterey County
Leatherback	May 1988	Santa Rosa Island, Santa Barbara County
Loggerhead	August 1983	Offshore Montecito, Santa Barbara County
Loggerhead	September 1983	Eight miles south-southwest of Anacapa Island, Santa Barbara County
Loggerhead	July 1987	Jalama Beach, Santa Barbara County

Source: Woodhouse 1988.

TABLE C.1

1985 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Asbestos		9,681	Pounds
Oil, Waste		309,223	Pounds
PCBs		152,615	Pounds
Chloroform	D001	4,760	Pounds
Petroleum Distilates	D001	19,125	Pounds
Ammonia Solution	D002	2,950	Pounds
Chromic Acid Solution	D002	971	Pounds
Hydrochloric Acid	D002	1,335	Pounds
Phosphoric Acid	D002	625	Pounds
Sulfuric Acid	D002	2,650	Pounds
Sulfuric Acid Solution	D002	2,549	Pounds
Cadmium Compound	D006	1,150	Pounds
Chromium	D007	37,620	Pounds
Sodium Chromate	D007	5,037	Pounds
1-1-1 Trichloroethane	F001	57,081	Pounds
Dichloromethane	F001	3,324	Pounds
Methyl Chloride	F001	140	Pounds
Perchloroethylene	F001	60	Pounds
Trichloroethylene	F001	34,395	Pounds
Freon 22 (Chlorodifluoromethane)	F002	415	Pounds
Paint Distillates	F002	64,656	Pounds
Trichlorotrifluoroethane	F002	111,957	Pounds
Trifluorochloroethane	F002	7,163	Pounds
Acetone	F003	500	Pounds
Alcohol, Methyl	F003	3,649	Pounds
Resin Solution	F003	290	Pounds
Methyl Ethyl Ketone	F005	10,030	Pounds
Alcohol, Allyl Ether	P005	1,000	Pounds
Potassium Cyanide	P030	15,050	Pounds
Isocyanates (Isocyanic Acid)	P064	6,704	Pounds
Diazonin	U061	1,150	Pounds
UDMH	U099	84,940	Pounds
Hydrazine	U133	200,468	Pounds
Hydrogen Fluoride	U134	10,375	Pounds
Mercury Compounds	U151	250	Pounds
Phenol	U188	140	Pounds
1985 TOTAL SOLID WASTE		1,164,028	POUNDS

TABLE C.2

1986 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Antifreeze		1,132	Gallons
Asbestos		7,005	Pounds
Contamimated Rags/Clothing		9,518	Pounds
Hydaulic Fluid		2,773	Gallons
Lab Pack Liquid (aged-surplus organics)		720	Gallons
Lab Pack Liquid (off-spec)		6,396	Pounds
Lab Pack Solid (aged-surplus organics)		1,625	Gallons
Lab Pack Solid (off-spec)		6,175	Pounds
PCBs		63,681	Pounds
Photo Waste		55	Gallons
Solid Spill/Blast Residue		22,770	Pounds
Water (contaminated w/paint and thinner)		423	Gallons
Alcohol, Isopropyl	D001	1,586	Gallons
Compressed Gas (NOS flammable)	D001	1,323	Pounds
Flam. Solids NOS (JP-4, paint & absorb.)	D001	4,710	Pounds
Flammable Liquid NOS - Contaminated with oil	D001	1,078	Gallons
Flammable Liquid NOS - Fuel with Filters	D001	1,180	Gallons
Flammable Liquid Paint with Thinners	D001	9,762	Gallons
Liquid NOS (flammable/lab-packed)	D001	17,130	Pounds
Methanol	D001	60	Gallons
Oil (contam.) & Mixed Petroleum Products	D001	17,204	Gallons
Oil (contam.) & Mixed Petroleum Products	D001	15,825	Gallons
Solid Crushed HZ Drums	D001	37,532	Pounds
Tank Bottoms	D001	2,180	Gallons
Acid (liquids)	D002	1,070	Gallons
Ammonium Hydroxide	D002	225	Gallons
Ammonium Hydroxide (lab-packed)	D002	50	Pounds
Chromic Acid Solution	D002	363	Gallons
Gas Mask Containers	D002	1,154	Pounds
Hydrofluoric Acid Solution	D002	210	Gallons
Liquid NOS (corrosive-poisonous)	D002	626	Gallons
Liquid NOS (corrosive/lab-packed)	D002	1,100	Pounds
Monoethanolamine	D002	50	Gallons
Nitric Acid	D002	2,095	Gallons
Nitric Acid (lab-packed)	D002	110	Pounds
Phosphate Acid Mixture	D002	70	Gallons

TABLE C.2

1986 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Potassium Hydroxide	D002	143	Gallons
Potassium Hydroxide (lab-packed)	D002	50	Pounds
Sodium Chromate Liquid	D002	425	Gallons
Sodium Chromate Solid	D002	172	Pounds
Sodium Hydroxide	D002	2,031	Gallons
Sodium-Hydroxide (lab-packed)	D002	50	Pounds
Sulfamic Acid	D002	30	Gallons
Sulfuric Acid	D002	798	Gallons
Titanium Tetrachloride (lab-packed)	D002	500	Pounds
Oxidizing Materials (lab-packed)	D003	900	Pounds
Packing Foam (reacted)	D003	3,313	Pounds
Peroxide (organic)	D003	17	Gallons
Poison B Liquid Foam Comp B Resin	D003	633	Gallons
Poison B Liquid NOS lab-packed	D003	50	Pounds
Zinc Oxide Contaminated Paint/Thinners	D003	4,150	Pounds
Arsenical Comp Liquid NOS (lab-packed)	D004	300	Pounds
Barium - Oxide	D005	950	Pounds
Liquid NOS (from missile rinse water)	D006	5,399	Gallons
Batteries (lead-acid)	D008	68,020	Pounds
Waste Mercury	D009	11	Gallons
1-1-1 Trichlorethane	F001	2,049	Gallons
Freon	F001	8,101	Gallons
Halogenated Solvent <10%	F001	3,427	Gallons
Methylene Chloride	F001	387	Gallons
Perchloroethylene	F001	30	Gallons
Trichloroethylene	F001	595	Gallons
Trichloromethane	F001	80	Gallons
Resin Solution	F003	59	Gallons
Hydrazine (0-50%)	U133	13,873	Gallons
Methyl Ethyl Ketone	U159	1,358	Gallons
Pesticides (spent)	U240	510	Gallons
1986 TOTAL LIQUID WASTE		101,448 GALLONS	
1986 TOTAL SOLID WASTE		257,109 POUNDS	

TABLE C.3

1987 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Antifreeze		1,723	Gallons
Asbestos		45,822	Pounds
Barium Solution		8	Gallons
Carbon Toner		170	Pounds
Cleaning Compound		20	Gallons
Cleaning Solution (aqueous)		650	Gallons
Clothing (contaminated)		5,855	Pounds
Containers (empty/crushed)		54,720	Pounds
Desicant (activated)		575	Pounds
Epon 934-Hysol		50	Gallons
Floor Wax		10	Gallons
Grease (off.spec.)		1,155	Pounds
Grease (waste)		100	Pounds
Grease and Water		195	Pounds
Hydrocubric 120-B		75	Gallons
Lab Pack (cleaning spray)		50	Pounds
Lab Pack (compressed gas)		11	Pounds
Lab Pack (non-flammable aerosols)		60	Pounds
Lab Pack (ORM-E-materials)		11,189	Pounds
Lab Pack (rust penetrant)		65	Pounds
Magnesium Silicate		400	Pounds
Metal Shavings		600	Pounds
Microbiocide H-430		60	Gallons
Nalco 8330-M		218	Gallons
Neodol		55	Gallons
Oil (filters)		5,020	Pounds
Oil (hydraulic fluids)		403	Gallons
Oil (waste)		599	Gallons
Packing Foam, Reacted		50	Pounds
PCBs		137,668	Pounds
Petroleum (spill residue)		30,575	Pounds
Photo Waste		101	Gallons
Potassium Ferocyanide		10	Gallons

TABLE C.3

1987 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Rags (oil and debris)		9,383	Pounds
Sealant		50	Pounds
Sodium Bisulfite		220	Gallons
Steran Foam (com. B)		105	Gallons
Water Contaminated with Oil		875	Gallons
Zinc Oxide		150	Pounds
Alcohol (oil-water)	D001	326	Gallons
Alcohol, Isopropyl and Oil	D001	3,004	Gallons
Chloroform and Solvents	D001	15	Gallons
Cleaning Compound	D001	60	Gallons
Fiberglass Resin	D001	5	Gallons
Freon and Petroleum	D001	100	Gallons
Fuel (jet [JP-4] absorbent)	D001	750	Pounds
Fuel (jet [JP-4] contaminated)	D001	300	Pounds
Fuel (Jet [JP-4, JP-5])	D001	33	Gallons
Fuel (waste tank bottoms)	D001	40	Gallons
Gas Mask Cannisters	D001	1,375	Pounds
Gasoline (contaminated)	D001	4	Gallons
Grease and Oil Sludge	D001	215	Gallons
Iridite	D001	150	Gallons
Lab Pack (aerosol spray can)	D001	1,111	Pounds
Lab Pack (flammables)	D001	19,676	Pounds
Lab Pack (waste enamel)	D001	20	Pounds
Molecular Sieve	D001	120	Pounds
Nitric Acid	D001	170	Gallons
Oil (waste)	D001	336	Gallons
Oil (waste)	D001	30,699	Gallons
Paint (assorted [waste])	D001	1,970	Pounds
Paint (off. spec.)	D001	55	Gallons
Paint (thinner and wastes)	D001	1,830	Gallons
Paint (w/absorbent)	D001	3,570	Pounds
Petroleum (distillate)	D001	6	Gallons
Phosphoric Acid and Alcohol	D001	68	Gallons
Sodium Persulfate	D001	100	Pounds
Spill Residue	D001	20	Pounds
Tar (roofing)	D001	4,013	Pounds
Water Contaminated with Oil	D001	16,078	Gallons

TABLE C.3

1987 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Zinc Primer	D001	210	Gallons
Acetic Acid	D002	1	Gallons
Acid (waste)	D002	2	Gallons
Ammonium Hydroxide	D002	40	Gallons
Ammonium Persulfate	D002	300	Gallons
Cadmium Plating Solution	D002	9	Gallons
Chromic Acid	D002	30	Gallons
Cleaning Compound	D002	65	Gallons
Descaling Compound	D002	55	Gallons
Hydrochloric Acid	D002	41	Gallons
Hydrofluoric Acid	D002	140	Gallons
Lab Pack (corrosive materials)	D002	1,726	Pounds
Nitric Acid	D002	1,100	Gallons
Nitric Acid and Water	D002	105	Gallons
Phosphate Acid Mixture	D002	2,881	Gallons
Potassium Hydroxide and Oil	D002	445	Gallons
Sodium Hydroxide	D002	870	Gallons
Sodium Hydroxide	D002	30	Pounds
Sodium Phosphate	D002	50	Pounds
Sulfuric Acid	D002	850	Gallons
Water (contaminated [launch])	D005	6,644	Gallons
Cadmium Solution	D006	1,410	Gallons
Missile Blast Residue	D006	2,050	Pounds
Paint (waste w/dirt-water-debris)	D006	849	Pounds
Sodium Chromate	D007	100	Pounds
Sodium Chromate	D007	195	Gallons
Zinc Chromate	D007	200	Pounds
Batteries (lead-acid)	D008	65,470	Pounds
Firestop Compound	D008	100	Pounds
Plating Solution	D008	102	Gallons
Zinc Oxide and Thinner	D008	3,055	Pounds
Lab Pack (poison B)	D009	183	Pounds
Mercury	D009	15	Pounds

TABLE C.3

1987 VAFB HAZARDOUS WASTES

WASTE DESCRIPTION	EPA NO.	AMOUNT	UNIT
Photo Solution	D011	12,059	Gallons
1-1-1 Trichloroethane	F001	17,840	Pounds
1-1-1 Trichloroethane	F001	517	Gallons
Dichloromethane	F001	19	Gallons
Freon	F001	465	Gallons
Freon	F001	33,690	Pounds
Freon and Petroleum	F001	167	Gallons
Paint (stripper [phenolic])	F001	220	Gallons
Solvent (halogenated [w/water])	F001	396	Gallons
Solvent (oil contaminated)	F001	401	Gallons
Trichloroethylene and Oil	F001	13	Gallons
Trichloroethylene and Water	F001	403	Gallons
NABVL Jelly	F002	40	Gallons
Paint (stripper)	F002	9,273	Gallons
Solvent (halogenated)	F002	56	Gallons
Steran Foam (com. A)	F002	360	Gallons
Acetone	F003	40	Gallons
Alcohol, Methyl	F003	372	Gallons
Alcohol, Methyl (w/waste oil)	F003	65	Gallons
Oil (waste)	F003	322	Gallons
Paint	F003	3,865	Gallons
Paint (polyurethane)	F003	950	Pounds
Paint-Thinner-Water	F003	98	Gallons
Zinc Primer	F003	23,695	Pounds
Methyl Ethyl Ketone	F005	202	Gallons
Methyl Ethyl Ketone and Foam	F005	400	Pounds
Methyl Ethyl Ketone-Water-Thinner	F005	252	Gallons
Cyanide	P030	1,815	Gallons
Lab Pack (flammable gas)	U099	1	Pounds
Non Isocyanate Resin Foam	U121	260	Gallons
Formaldehyde	U122	125	Gallons
Hydrazine (aqueous solution)	U133	20,727	Gallons
Hydrazine and Alcohol	U133	240	Gallons
Paint (remover [slop])	U154	30	Gallons
Adhesive (latex resin base)	U220	50	Gallons
1985 TOTAL LIQUID WASTE		127,673 GALLONS	
1987 TOTAL SOLID WASTE		486,342 POUNDS	

APPENDIX D

TECHNICAL MEMORANDUM
ACIDIC DEPOSITION
TITAN IV/CENTAUR LAUNCH
FROM PROPOSED CYPRESS RIDGE SITE

The launch of a Titan IV/Centaur would result in the formation of a ground cloud composed primarily of water, hydrochloric acid (HCl), and aluminum oxide (Al_2O_3). Twenty-six thousand gallons of deluge water would be utilized during launch, with approximately 75 percent, or about 20,000 gallons, evaporating into the ground cloud (USAF 1988b). Water vapor in the ground cloud would condense around Al_2O_3 particles to form droplets and, once condensed, readily absorb HCl from the cloud, thereby forming acidic droplets, which would fall to the ground. Based on measurements taken from Space Shuttle launches, the pH of these droplets would be between 0.1 and 1.0 (NASA 1983). Because of this high acidity, there is the potential for alteration of the pH of nearby streams or bodies of water where droplets might fall. One such stream, Honda Creek, which lies approximately three miles north of the proposed Cypress Ridge site, could be the recipient of acidic deposition. This deposition could have an adverse impact on the unarmored three-spined stickleback, a federal- and state-listed endangered species of fish, which is known to occur in Honda Creek.

In order to determine if the unarmored three-spined stickleback or other aquatic life could be harmed by acidic deposition, an analysis was performed to calculate the pH change of Honda Creek that would result from a Titan IV/Centaur launch. This analysis utilized a reasonable worst-case scenario, which assumed that acidic deposition from a launch would be most dense in the vicinity of Honda Creek. A computer trajectory deposition model, TRAJM, was used to calculate the amount of acidic deposition over a given area. TRAJM is a near-field model and can be used to predict the amount of acidic deposition close to a launch pad (NASA 1983). It was originally used by NASA to predict acidic deposition from Space Shuttle launches in Florida.

By using an iterative method, it was determined that the maximum amount of acidic deposition would fall into Honda Creek when the wind was blowing from the south at approximately 25 miles per hour. Under these conditions, the model calculated the acidic deposition rate in the area of Honda Creek to be about 8.2 gallons per acre. The deposition rates for annuli centered on the Cypress Ridge site in relation to the surrounding environment are shown in Figure D.1.

To determine the amount of acidic deposition in Honda Creek, assumptions were made as to the size of the stream and the dimensions of the ground cloud. These assumptions include the following:

- The width of the stream was three feet.
- The depth of the stream was six inches.
- The length of the affected stream area was one kilometer.
- The width of the ground cloud was one kilometer when it reached the stream.

Using these assumptions, the surface area of the affected stream was determined to be 0.225 acres. The volume of the affected stream was calculated to be 36,734 gallons.

No data were available detailing the water chemistry of Honda Creek, but analyses of other streams in the area were available and were used to make some assumptions about Honda Creek water quality (USAF 1988a). These assumptions were:

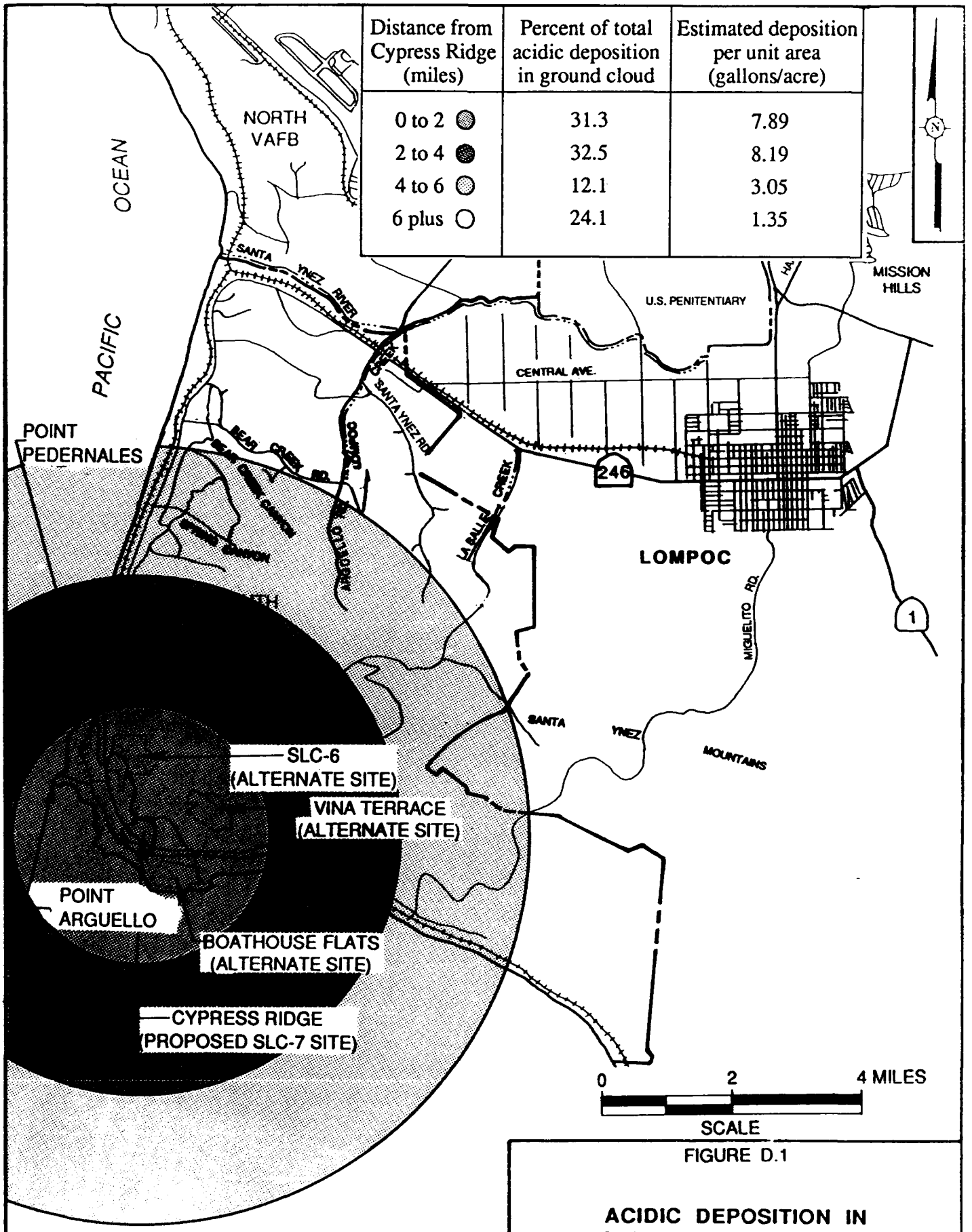
- The pH of the stream was 7.7.
- The concentration of $CaCO_3$ in the stream was 250 mg/l.
- The concentration of Na in the stream was 150 mg/l.

Another assumption of the analysis was that no fresh water would displace the water in the stream once the acid was deposited.

Initially, stream chemistry changes were calculated without using any buffering factors. The amount of acidic deposition that would fall into the stream was calculated to be 1.85 gallons, with a pH of 0.1. Combining this with the water in the stream at a pH of 7.7, and assuming no neutralizing reactions took place, the pH in the stream changed from 7.7 to 4.4.

However, in actuality, the stream contains basic compounds (Ca and Na), with the capacity to buffer HCl. The total amount of HCl that would come in contact with the stream in a worst-case incident could raise the HCl concentration in the water to 1.46 mg/l. The addition of this small amount of HCl would not change stream pH since the concentrations of the buffering agents (both Ca and Na) are in excess of the amount needed to neutralize the HCl.

Because the pH of Honda Creek would not change under the modeled worst-case acidic deposition scenario, no effects to the resident unarmored three-spined stickleback are expected to result from acidic deposition related to Titan IV/Centaur launches from the proposed Cypress Ridge site.



WIND SPEED = 25 MILES PER HOUR
COMPUTATION PERFORMED BY TRAJM (NASA 1983)
SOURCE: USAF 1987a

FIGURE D.1

ACIDIC DEPOSITION IN VICINITY OF HONDA CREEK